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See pages 17, 18, 20, 111, 113, 115 for catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 130

PITTSBURGH WATER METERS

IMO

silent, Not making any sound or noise; noiseless.

and Here's the Reason

One of the foremost features of the Pittsburgh IMO Meter is the absolute lack of noise when it is operating. Any water works man who has attempted to placate a consumer, annoyed by the clicking sound of a water meter telegraphed through the house, will appreciate this feature. Many purchases of IMO Meters have been based on this attribute alone.

An annoyed consumer is never a satisfied one. With the increasing attention being devoted to better public relations, the elimination of noisy water meters should be given serious consideration.

The Pittsburgh IMO Meter can never become noisy. Smooth turning rotors, precision cut to mesh perfectly, revolve with a semi-floating action and water flows through the measuring chamber in a straight line without any turbulence. Wear on rotors or measuring chamber has been shown to be negligible. This basic construction precludes the possibility of the IMO Meter ever becoming noisy.

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Types of Projects That WPA Approves

A Check List for WPA Sponsors

WITH $725,000,000 appropriated by Congress to finance the Works Progress Administration to June of this year, and the certainty of another huge program of Federal aid to local governments for the fiscal year beginning July 1, 1939, many municipal officials are studying types of available projects, to the end that the best use may be made of the funds to be allocated to their respective communities. To aid in such selection, THE AMERICAN CITY has asked the Works Progress Administration to list in alphabetical order the various types of projects approved since the Works Program was organized—projects such as would presumably be approved for future allotments to public bodies providing the necessary sponsorship. The following statement and list are the result:

Many Types of WPA Projects

The Works Progress Administration has placed in operation a total of more than 300,000 projects. Except for the more pretentious types of construction, these projects have covered almost the whole field of American endeavor in meeting the primary objective of relieving unemployment.

It was realized from the start of the Works Program that any attempt rigidly to confine activities of the WPA to popular and standard types of work might defeat the very purpose of the relief appropriations by failing to provide employment for tens of thousands of unemployed who were totally unequipped for any except certain types of work. Consideration, also, has been given to the selection of types of projects most suitable to employment of the needy in the immediate vicinity of their homes.

Elasticity in the setting-up and approval of projects has therefore been constantly in the minds of responsible WPA officials. This accounts for the great range in the accompanying list of the types of projects that have been operated by the WPA since July 1, 1935. It also accounts for the fact that there are about as many types of projects in the Women's and Professional Division as there are in the Construction Division, though more than 75 per cent of employment has been on projects of the construction type.

Types of Construction and Improvement Projects

Airports and airways—air beacons; air markers; landing fields; runways, concrete, bituminous or other

Bridges—wood, steel or masonry

Buildings—administrative, office, etc.; aircraft hangars; auditoriums; barns; community buildings, workshops, etc.; dormitories, etc.; firehouses; garages; gymnasiums; hospitals; institutional buildings not elsewhere classified; libraries; recreational buildings, park pavilions, camps; schools; stadiums, grandstands, etc.; waiting stations, bus and trolley shelters, etc.; warehouses, arsenals and similar storage buildings

Bulkheads

Canals and channels (navigable)

Car and railroad track

Cemetery vaults

Clearing and grubbing

Conservation—bird and game sanctuaries; dipping animals, sheep, cattle, hogs or other; noxious plant eradication other than spraying; plant and tree nurseries; planting oysters; reforestation; rodent and predatory animal eradication; spray treatments, disease and insect pest eradication except mosquito control; stocking, fish, game and fowl

Culverts

Curbs

Dams—storage dams; check, diversion and other dams

Docks, wharves and piers

Drainage—roadside drainage; drainage other than roadside and mosquito eradication

Dredging (other than channels)

Excavation and fill

Fences and wall-fences

Fire prevention—firebreaks; fire and forest trails; fire observation towers

Fish hatcheries

Fish protective devices

Fountains and ornamental pools

Gas lines

Grade-crossing elimination

Grading other than excavation or fill

Guard-rails and guard-walls

Gutters (paved)

Highways, urban, rural primary roads, rural secondary roads and other—bituminous or concrete; bituminous topped (other than oiled); brick or block; dirt, clay, gravel, loam, oiled, etc.; shoulders; weed cutting along right-of-way

Irrigation—canals

Jetties and breakwaters

Landscaping other than parks—landscaping around public buildings; landscaping and planting along roadside

Levees and embankments

Lighting—lighting parking lots, athletic fields, air landing fields, etc.; lighting roads and streets

Mine sealing

Mosquito control

Public fair and rodeo grounds

Paving (other than roads, walks, or runways. Include dirt, gravel, cinder, and oiled, under other)

Pumping stations

Recreational facilities—athletic fields; bandshells; golf courses; handball courts; horseshoe courts; ice skating areas; outdoor theaters; parks; playgrounds; ski jumps; ski trails; pools, swimming pools and wading pools; tennis courts; other recreational facilities

Retaining walls and revetments

Riprap (other than river bank)

River-bank improvement

Sanitary toilets

Sidewalks—paved walks; unpaved walks

Slopes, berms, and terraces, other than road shoulders

Storm and sanitary sewers—trunk lines; laterals; service connections; manholes; catch-basins, etc.

Stream-bed improvement

Treatment plants—sewage or water; garbage incinerators

Tunnels—railway, vehicular, pedestrian or other

Vehicle scales

Water supply—mains, aqueducts, or distribution lines; wells; storage tanks, reservoirs, cisterns, etc.

Types of Professional and Women's Projects

Art—art instruction; art monographs; drawings, easel paintings, murals, or sculptured works; etchings, lithographs, woodblocks, etc.; Index of American Design plates; lantern slides; photographs; posters; visits to art galleries, museums, art centers, etc.; other works of art.

Distribution of commodities—cloth; clothing; foodstuffs; leather; milk; seeds; stone, sand and gravel; wood; other

Education—educational activities, adult education, nursery schools or other eligible assignments

Historic surveys—historic American building survey; historic American merchant marine survey; historic records survey, municipal, state, county, town, church or other unit

Libraries and book repair—additional reading rooms in existing libraries; cataloging for existing libraries; new branch libraries; new traveling libraries; renovation of books

Medical, dental and nursing—dental clinics assisted; dental activities conducted; health talks for school children; health and hygiene classes for adults; hospitals operated, tuberculosis, general or therapeutic; medical clinics assisted, trachoma, prenatal or other; medical clinics operated, trachoma, prenatal or other; medical examinations other than at clinics; nursing visits; nursing aid to clinics; nursing aid at immunizations

Music—music classes; musical performances, symphony, or concert orchestras, opera or other, free and paid

Planning—agriculture, natural resources, industry, financial, transportation and communication, real estate, housing, government, social, criminal, judicial and legal

Planning surveys conducted—national, state-wide, regional, county-wide, municipal and local

Planning surveys assisted—national, state-wide, regional, county-wide, municipal and local

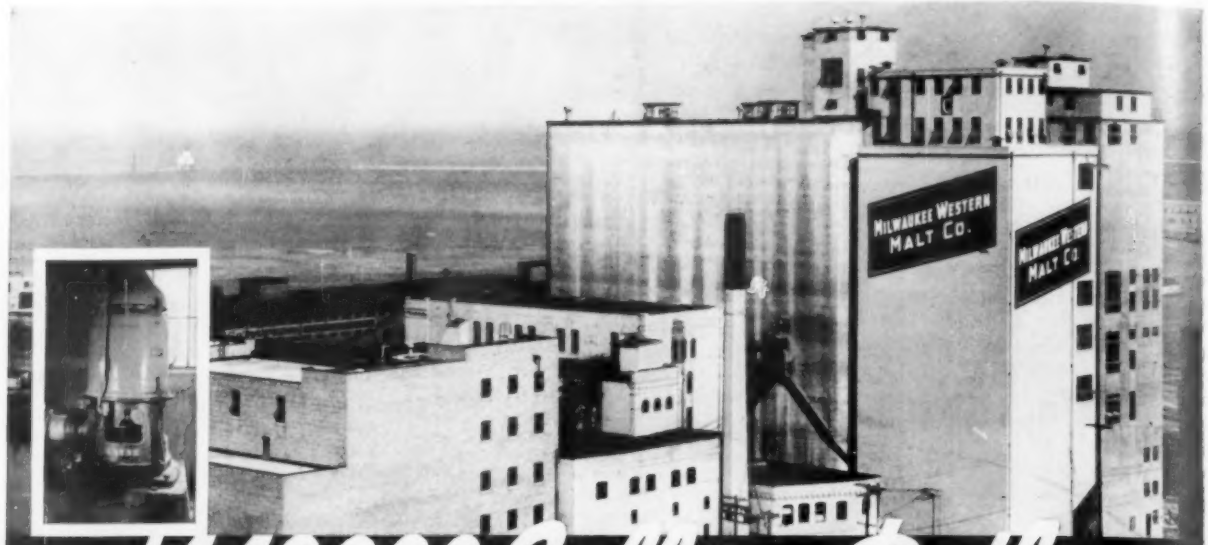
Recreation—arts and handicraft work; athletic activities, games and contests supervised; community centers assisted; community centers operated; dancing, folk, social or other; recreational drama, tournaments, festivals, pageants, plays, puppets and marionettes or other; recreational music; recreational training; other recreation, camping, hiking, gardening, nature study, picnicking

Research and statistical studies—sociological; economic; administrative; governmental; scientific; recreation; health

Sewing rooms—adult clothing; children's garments; infants' garments; sewing-room articles other than clothing

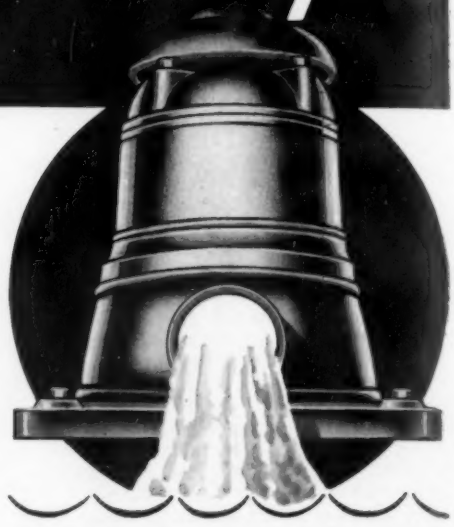
Theater—dramatic classes; theater performances (free and paid), drama, vaudeville, circus, puppets, etc.

Miscellaneous—archaeological excavations; assistants in nursery schools; Braille; clerical and statistical work not elsewhere classified for state, county, municipal or Federal; dormitories for school children; engineering surveys (triangulation, traverse, levels, underground, topographic, mapping, riparian, stream or property tax); Federal archives survey; gardening; guide service to National Park service, museums, etc.; housekeeping aides; house numbering; museum activities; police and fire alarms and signals (including electric traffic signals); school lunches; street signs and traffic control other than electrical or mechanical; writing, including Federal Writers' Project.



1,440,000 Gallons Daily

FOR MILWAUKEE WESTERN MALT CO.



"NOT less than 900 Gallons per Minute" said Layne-Northwest Company's contract for a new well and pump unit for the Milwaukee Western Malt Company's new plant. When drilled to 1740 feet deep, the pump set and tested, the production was 1,000 gallons per minute—or a bit more than 10% above the guarantee. The entire contract was awarded to Layne-Northwest Company on a non-competitive basis, though another well firm had done previous work.

This method of combining wells and pumps under one contract avoids the possibility of divided responsibility between well contractor and pump manufacturer. This is of utmost importance to the customer as it assures highest overall well and pump efficiency.

When considering a new water supply or rehabilitation of your present wells or pumps, Layne will investigate your problem and submit estimates without obligation. Write for bulletin.

LAYNE & BOWLER, INC.
Dept. B, Memphis, Tenn.

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LAYNE-ATLANTIC CO. . . . NORFOLK, VA.
LAYNE-CENTRAL CO. . . MEMPHIS, TENN.
LAYNE-NORTHERN CO., MISHAWAKA, IND.
LAYNE-LOUISIANA CO. LAKE CHARLES, LA.
LAYNE-NEW YORK CO. . NEW YORK CITY.
AND PITTSBURGH . . . . . PA.
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DALLAS . . . . . TEXAS.
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LONDON . . . . . ONTARIO, CANADA

LAYNE

PUMPS & WELL WATER SYSTEMS

FOR MUNICIPALITIES • INDUSTRIES • RAILROADS • MINES AND IRRIGATION

Our Municipal Notebook

Live Municipal Records

THE adaptability and widening use of visible index systems is indicated by the trial of a Remington Rand Linedex index on one of New York's 600 prowl cars. The little index book, each page protected by a sheet of transoloid, is mounted at the right of the dash, and for stolen cars furnishes quickly the Teletype alarm number, the make and motor and license numbers.

This is only one of municipal records or departments using visible equipment for instantaneous reference and speed in posting. The idea in such a system is to make a great deal of information immediately available both on the margins of the cards in plain sight, and by means of colored signals that show at once which cards carry the information that is wanted at the moment. By making a set of records easy to use, the value of the records is greatly increased.

THIS TAX-DELINQUENT UNFINISHED STRUCTURE HALF A MILE FROM DETROIT'S BUSINESS DISTRICT IS NOW A STORAGE SPACE FOR AUTOMOBILES. FROM HERE IN, LET 'EM USE MASS TRANSPORTATION

Finance Transit!

ON page 83 of this issue is an article on city transportation which gets somewhere. The trouble with transit is obsolete facilities, large debts and insufficient revenue to purchase modern vehicles. Harry C. Koch's analysis and proposal that the city's dollars rather than the citizens' nickels rehabilitate the local transportation systems is a contribution to clear thinking in this muddled field.

Courtesy of The Ediphone Division, Thomas A. Edison, Inc.

CONVENIENT

The Municipal Significance of Dictating Machines

ONE of the most significant things about the use of dictating machines by municipalities is that:

(1) Where there is a large volume of dictation,

(2) Where there is an important consideration,

(3) Where money is scarce,

dictating machines should be used.

This of itself pretty well establishes their value as essential modern office appliances. Not all the big-city departments use them; not all very-busy municipal officials use them; not all financially hard-pressed municipalities use them; but these are the circumstances which are most likely to bring dictating machines into city hall. They are beginning to be regarded, however, as a natural office tool to be used under any circumstances.

The Board of Estimate of the city of New York provides an example of a large volume of work which needs to get into the form of minutes within a reasonable time. The Board holds three or four meetings each week, lasting from four to six or more hours and requiring anywhere from 20 to 400 typewritten pages to report them. A recent typical meeting lasted from 10:40 to 2:30 P.M. The expert stenographer dictated his notes into a machine for twelve to fourteen hours, or two days. To dictate from his notes to a stenographer would have taken four or five days, because, as he says, "after two hours you get in her hair." There must be intermissions. If he had transcribed his own notes by typewriter, it would have taken him six days. With an adequate transcription department, the day's dictation can be delivered typed the next noon. In 1938, two new desk dictating machines and the transcribing machines were added to the 1937 and 1930 models already used. Machine dictation has been standard practice in New York City since 1914, when a stenographer in the Mitchell administration sold the idea on the basis of getting the work done quickly, economically, and sensibly.

When New York City inaugurated its sales tax, an Emergency Revenue Division had to be created to receive and administer it. Four dictating machines were installed for convenience, economy and time-saving in the production of general correspondence and the reports made by investigators.

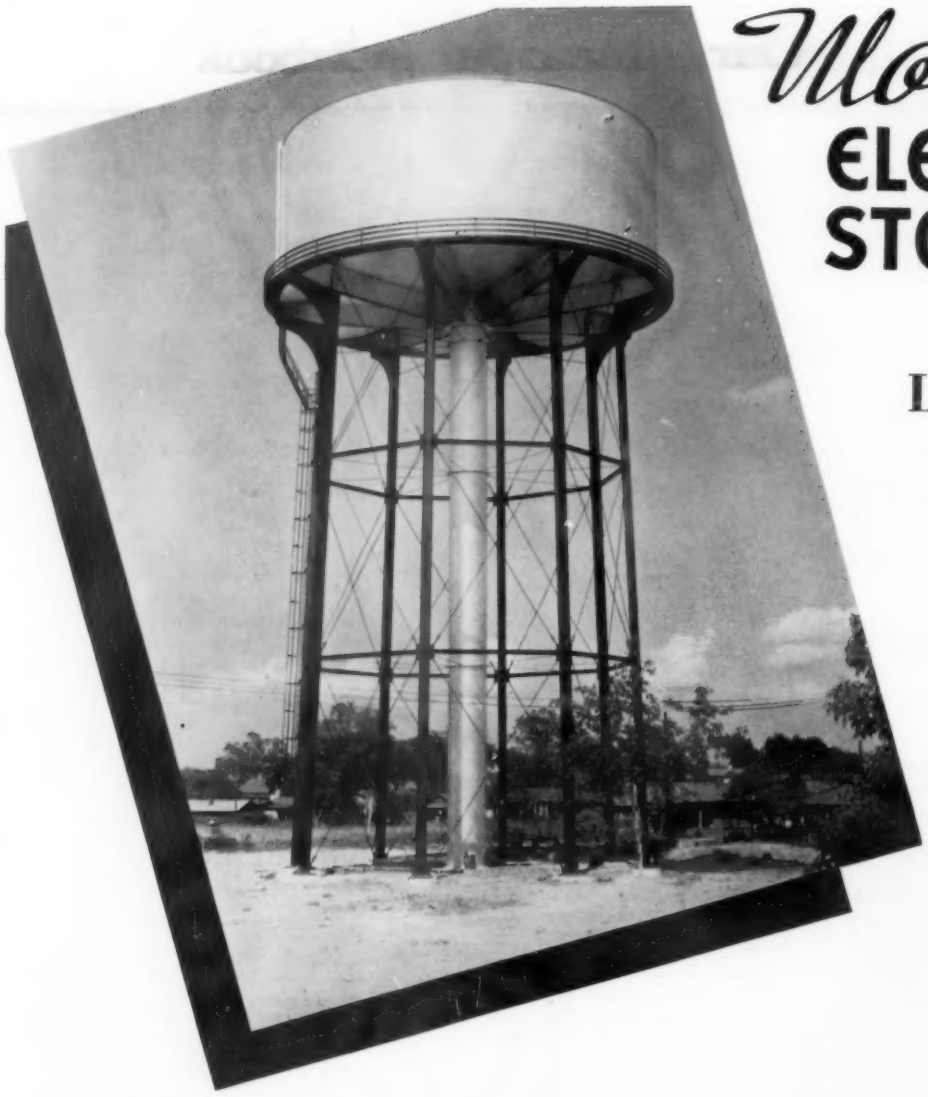
The world's largest user of modern dictating equipment is the New York City Department of Welfare, which, in addition to permanent activities in this field, administers the city's relief work resultant from the depression. The investigation corps is equipped with more than $200,000 worth of Ediphones and Dictaphones. As may well be believed, the purchase of this equipment was preceded by a detailed study of estimated savings and other advantages, and was followed by a still more detailed record of performance. This extensive installation has worked out satisfactorily in the last two years, and has been added to from time to time. For dictating booths and machines do not even go to lunch.

Courtesy of Dictaphone Sales Corporation

EFFICIENT

Dividends from Carefulness

A SUCCESSFUL campaign conducted by City Manager H. W. Jorgensen's Safety Committee in San Diego, Calif., has resulted in a refund of $33,243.09 of the 1937 premiums paid by the city to the State Compensation Insurance Fund. If the same care, extended to all the cities, bore the same fruit, there would be annual safety dividends of more than 10 million dollars returning to the cities.



Modern ELEVATED STORAGE for Louisiana's Capital

Illustrated at the left is the new 500,000-gal. Horton radial-cone bottom tank which has been recently installed by the Baton Rouge Water Works Co. in its distribution system. Alvord, Burdick & Howson, of Chicago, were the Consulting Engineers on the improvements.

RESIDENTS of Baton Rouge, Louisiana, and its suburbs are enjoying improved water service, made possible through the use of the 500,000-gal. radial-cone bottom tank that the Baton Rouge Water Co. installed in its distribution system. Since the tank has been in service the average pressures in the distribution system range from 45 to 57 lbs. per sq. in.

From an operating standpoint, the tank is typical of modern waterworks practice. It will maintain the above pressures in the mains, preventing interruption of service in case of temporary power or pump failure. It will smooth out pressure fluctuations. And one of the most important advantages that is expected to result from this installation will be the reduction of present pumping costs. (Comparative costs for a full year of operation are not yet available.)

These are but a few of the many benefits that are possible through the use of modern elevated storage. We shall be glad to furnish information or quotations on elevated tanks to meet your requirements. Ple[illegible] address our nearest o[illegible]

CHICAGO BRIDGE & IRON COMPANY

Chicago	2127 Old Colony Bldg.	Philadelphia	1616 "1700" Walnut St. Bldg.	San Francisco	1033 Rialto Bldg.
New York	3308-165 Broadway Bldg.	Boston	1501 Consolidated Gas Bldg.	Houston	2919 Main Street
Cleveland	2236 Rockefeller Bldg.	Birmingham	1502 N. Fiftieth Street	Tulsa	1625 Hunt Bldg.
Detroit	1501 Lafayette Bldg.	Dallas	1406 Liberty Bank Bldg.	Los Angeles	1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Safety in Water Supply

Mottled Enamel Checked by Change of Water Supply

BAUXITE, Ark., occupies a prominent place in mottled enamel history. It is a small mining community that was established in 1901 to provide homes and a social environment for the employees of a mining company. It is located about 25 miles southwest of Little Rock, and the present population is estimated to be about 1,800.

Apparently the first to report endemic mottled enamel at Bauxite was Dr. F. L. Robertson of Benton, a city about 5 miles from Bauxite. He reported to the Arkansas State Board of Health, and in March, 1926, the State Health Officer asked the U. S. Public Health Service to make a study of mottled enamel in Bauxite.

The original domestic water supply of Bauxite was obtained from shallow wells and a few springs. With the increase in population and contamination of certain of these surface supplies, a new water supply became necessary, and in 1909 two 297-foot wells were drilled. One of these wells became partly filled at the bottom from caving, and in September, 1925, a new 245-foot well was added.

In February, 1928, a survey of mottled enamel was made by Kempf and McKay, of the U. S. Public Health Service. In this survey 458 children, ages 5 to 18, were examined in the schools of Bauxite. Mottled enamel of some teeth was found in 202 cases, or 44 per cent. Among the 458 children examined, there were 66 children, ages 5 to 18 years, who, the authors state, were born in Bauxite, had lived there all their lives, and had always used the municipal deep-well supply. Of these 66 children, 63 had some permanent teeth erupted. Sixty-one of the 63 showed evidence of mottled enamel. It was also noted in this report that the homes of each of the two children with normal teeth were piped for the common water supply, but one gave a history of not using this water for either cooking or drinking, while the other is recorded as having used spring water for drinking most of the time.

The evidence collected by these investigators in the examination of the elementary and high school children was summarized as follows:

1. No cases of the enamel defect were found which antedated the introduction of the deep-well water.

2. The oldest individual found with this enamel defect was born about the time that the deep-well water was introduced.

3. All individuals in the community who had used the deep-well water during any considerable period of enamel formation exhibited this defect.

4. No individual in the community whose enamel had developed elsewhere exhibited this defect.

5. Certain individuals, who, although residents of the community and attending school there, but who actually lived beyond the distribution of the deep-well water and depended upon the original shallow wells, exhibited only normal enamel.

A quantitative determination of the fluorine content of the Bauxite deep-well water showed 13.7 parts per million.

The use of filtered river water began in May, 1928, and has been continuous since that time. Of the two deep wells from which water was obtained prior to the time of the change, one, the 245-foot well, is still used for industrial purposes, the other having been abandoned. There is no record of water from the deep wells having been pumped into the distribution system since the installation of the filtered river water in 1928.

Approximately ten years after the change in the communal water supply, Bauxite was resurveyed. This survey showed definitely that endemic mottled enamel has again been halted by changing from a common water supply containing toxic amounts of fluorides to one relatively low in fluorides. A similar result was secured in Oakley, Idaho, which was the first known instance of a community abandoning an otherwise satisfactory common water supply solely for the purpose of preventing the development of mottled enamel.

On the basis of the degree of affection observed in the 14- and 15-year-old children whose "first group" of permanent teeth were calcified largely under the influence of the old deep-well supply, the tentative community mottled enamel index associated with the deep-well supply was "very marked." The application of this same method to the percentage distribution of severity in the 45 children born since the change in the water supply shows that the "actual mottled enamel index" at Bauxite at present is negative.

—Prepared from a paper by H. TRENDLEY DEAN, Dental Surgeon, FREDERICK S. MCKAY, Consultant, and ELIAS ELVOVE, Senior Chemist, U. S. Public Health Service, published in the September 30, 1938, issue of *Public Health Reports*, pages 1736-1748.

Never Fail to Sterilize New Water Mains

JUST as a neat housewife always carefully washes new dishes, boils new cooking utensils or washes new towels before using, so should municipalities sterilize new additions to the water mains, otherwise the community may be exposed to the dangers of typhoid fever and other ills. Although epidemics of typhoid fever and other ailments can be traced to lack of sanitary precautions, comparatively few cities prior to 1937 were using adequate methods to sterilize new additions to water mains, according to B. A. Poole, Chemical Engineer, Bureau of Sanitary Engineering, Indiana State Department of Health.

New Elevated Tank of Unusual Design

THE Indianapolis Water Co. is installing the second large-capacity elevated tank in its water-works system at Indianapolis, Ind. The first tank, built in 1931, has a capacity of 1,500,000 gallons and is 72 feet to the bottom. It is of the radial-cone design and has a range in head of only 25 feet.

The new tank, which is being fabricated at the present time, is also of the radial-cone design. The tower posts are of tubular construction in contrast to the structural columns used on the first tank. There are also several other outstanding features of construction on the new tank. It has no balcony, the tank being spheroidal in line throughout. The radial girders follow the curve of the bottom towards the shell and end just short of the place where the tank shell is vertical.

Instead of one large riser at the center of the structure, the new Indianapolis tank will have four posts arranged in a cluster. One of these posts will serve as a riser, while the second will contain a ladder providing access to the inside of the tank. The other two will serve as supporting members only. The reason for using four small columns at the center of the tank instead of one large riser is that the use of a large riser tends to give the tower an unbalanced appearance.

The new tank is 92 feet high to the bottom and has a range in head of 30 feet between the upper and lower water levels. Welded construction is being used throughout and the tank is being fabricated by the Chicago Bridge & Iron Co., 37 West Van Buren Street, Chicago, Ill., for the Indianapolis Water Co.

SKETCH OF THE NEW 1,500,000-GALLON ELEVATED STEEL TANK BEING FABRICATED FOR THE INDIANAPOLIS WATER COMPANY

They say this about Aluminum at Cleveland's Easterly Sewage Treatment Plant

ALCOA ALUMINUM

Mention THE AMERICAN CITY—it helps.

Public Health and Sickness

Our Health and Infant Mortality

THE 27 cities whose infant mortality rates for the past ten years are given in the table below have a combined population of about 27,000,000. The total death rate in these cities in 1937 was 11.6 and the birth rate 15.3, an excess of 3.7 births over deaths. With the decline in the birth rate we are getting nearer and nearer to the point where deaths will exceed births, according to the *Quarterly Bulletin* of the New York City Department of Health. The highest birth rate was recorded in Jersey City, with Denver, Colo., in second place.

The death rates vary from 8.6 for Detroit to 15.9 for Denver. Inasmuch as these are crude death rates, they do not take into account the differences in the age and race composition of the populations. These factors undoubtedly account for many of the differences in the rates recorded.

Over the ten-year period 1928-1937 a vast improvement has taken place in infant mortality rates. Of the 27 cities whose rates were recorded in 1928, only two cities registered a rate below 50—Portland, Ore., with a rate of 43, and San Francisco with a rate of 45. In 1937, however, 11 cities had an infant mortality rate below 50. Eight of these showed rates between 30 and 40, the lowest being established by Rochester, N. Y., with an infant mortality rate of 32; Jersey City and San Francisco tied for second place with a rate of 33. Of the largest five cities in the country, Chicago again established the best record with a rate of 38; Detroit was next with a rate of 43, and New York City was third with a rate of 44.

Perhaps the most outstanding accomplishment during the past ten years is that represented by the decline in the diphtheria death rate. In 1928 the diphtheria death rates in New York, Chicago and Philadelphia were 10.7, 14.5 and 11.1 respectively; last year, rates of 0.8, 2.3 and 0.3 were reported. In these cities alone this decline represents a saving of more than 1,300 children's lives. If the 1928 rates had prevailed, 1,544 deaths would have occurred instead of the 149 that were reported. The picture is just as striking for other cities in the group, two cities, Rochester and Kansas City, having a record of no deaths from diphtheria.

INFANT MORTALITY—27 LARGE AMERICAN CITIES—1928-1937

	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
New York	66	59	57	56	51	53	52	48	46	44
Chicago	64	60	54	57	49	49	48	40	39	38
Philadelphia	71	62	64	64	52	49	54	49	46	45
Detroit	77	69	65	56	52	51	50	45	53	43
Los Angeles	66	65	62	59	56	57	53	52	57	52
Cleveland	60	61	54	54	53	44	45	44	43	44
St. Louis	63	55	53	60	51	46	61	51	48	51
Baltimore	82	73	65	74	62	61	65	57	67	57
Boston	77	69	70	61	59	59	58	52	52	51
Pittsburgh	75	74	69	70	67	53	55	50	51	51
San Francisco	45	50	40	41	39	40	33	35	42	33
Washington, D. C.	74	66	67	66	67	69	56	52	72	61
Milwaukee	68	71	55	57	45	46	44	45	45	39
Buffalo	65	69	70	71	73	65	66	59	50	54
New Orleans	78	80	88	75	75	82	87	77	93	78
Minneapolis	51	49	55	61	54	49	48	43	44	39
Cincinnati	85	77	65	71	55	57	65	60	..	57
Newark	64	60	52	52	42	45	45	55	46	37
Kansas City, Mo.	76	74	68	69	58	53	60	59	56	50
Houston	79	63	73	64	62	62	69	59	56	59
Louisville	61	63	51	54	49	51	42	46	44	64
Rochester	81	72	67	78	69	68	73	57	40	32
Jersey City	85	67	75	66	55	61	69	61	56	33
Columbus	73	71	71	81	59	69	58	56	62	51
Portland, Ore.	43	43	41	35	33	38	36	34	39	36
Toledo	91	84	93	70	69	58	65	60	52	53
Denver	65	70	56	56	61	57	52	53	62	64

Bus Restaurant a Typhoid Focus

HOW widely an epidemic disease can be spread by means of modern rapid transportation was demonstrated recently by an outbreak of typhoid fever due to infected drinking water at a western bus station, according to the *Quarterly Bulletin* of the New York City Department of Health.

Three cases of typhoid fever were reported to the Department in the latter part of April. All of them gave a history of having traveled by bus from Chicago to New York City, during which time they showed no symptoms of the disease. All of them gave the date of the appearance of the first symptom as April 15. Through correspondence with the Chicago Department of Health it was found that two additional cases of typhoid fever under investigation there had traveled on this same bus line at about the same time, but in the opposite direction. With interest centered on this line, the scheduled stops were checked carefully with the routes taken by the patients, and two of these stops, one in Indiana and one in Ohio, were the only ones found to be common to all the cases. Further investigation of the reported New York City typhoid cases gave the final clue—a man who had driven in to New York City alone by automobile from Chicago had stopped only at the Indiana restaurant.

Correspondence with the Indiana State Health Department disclosed that it had traced about forty cases of typhoid fever to a contaminated water supply at the inn patronized by the bus passengers. The disease had been reported in thirty residents of Indiana, and in passengers from Ohio, Illinois, Michigan and California, as well as from New York. The water used at the inn had been contaminated by a sewer which was broken about five feet from the well used as the water supply. The inn was ordered to close. Fluorescein flushed through the toilet system at the inn entered the sewer and was recovered within five minutes in the well water, thus confirming the suspicion that this leak in the sewer was the cause of the outbreak. The sewer was immediately repaired, and then tests made of the water from the well showed that it was no longer polluted. The local health department, now being satisfied that the water was safe, permitted the restaurant to open.

Care of the Sick Poor by Local Government

RECOGNIZING sickness as the foremost cause for dependency, a committee of the American Public Welfare Association, in cooperation with more than twenty medical and public health groups, is undertaking to formulate a coordinated plan for the care of the sick poor by local governments. The committee will try to devise a plan which will eliminate duplication and diffused responsibility found in the present administration of tax-supported medical care.

A preliminary study has disclosed the following typical set-up for local tax-supported medical service: A general hospital and out-patient department, and salaried physician's service for home and office care operated by the city welfare department, and physicians' service, nursing and dental service paid for by the welfare department. Tuberculosis, contagious disease and maternity hospitals, social disease clinics, child welfare and tuberculosis clinics operated by the department of health. Also, the county commission usually operates an infirmary for the care of the chronic sick, while other county departments frequently have the responsibility of paying for hospitalization and physicians' service for certain other classes of persons.

The committee found duplicating systems of home nurses' and physicians' care in many cities. For example, one set of physicians, under the department of health, was made responsible for diagnosing contagious disease in the home, and for providing quarantine or warning of the disease, while welfare department physicians treated such patients.

Among the general principles on eligibility for tax-supported medical care recommended by the committee from its preliminary study are that agreements concerning standards of eligibility should be developed by conferences of local officials and representatives of the medical profession; also that the need for medical care should be determined by a physician, and that eligibility for care at public expense should be determined by the governmental agency responsible for payment.

CINCINNATI SELECTS 3 MORE AHRENS-FOX PUMPERS!

IN 1853 Mr. Chris Ahrens, founder of the Ahrens Manufacturing Company, and father of John P. Ahrens, vice-president of Ahrens-Fox, helped build the first successful steam fire engine in this country. This engine saw service in the Cincinnati Fire Department.

Since then more than one hundred pieces of Ahrens-Fox fire apparatus have successfully served the Cincinnati Fire Department. And now Cincinnati selects three more Ahrens-Fox Pumping Engines!

Ahrens-Fox apparatus is designed and built by men who are specialists in the building of dependable motor fire apparatus and who know the needs of the service from long lifetimes of experience. Thus Cincinnati's new equipment performs beyond all expectations!

No matter what type of pumper your city needs, remember that Ahrens-Fox are specialists in the building of dependable motor fire apparatus. Write for full information—and make your own comparisons.

THE AHRENS-FOX FIRE ENGINE CO. . . . CINCINNATI, OHIO

ONE OF THE THREE new Centrifugal Pumpers of the Cincinnati Fire Department.

AHRENS-FOX QUALITY

NEW! Note the rear windshield with hangers for 4 men. Complete protection without sacrificing utility of the apparatus. The windshield can be tilted up out of the way when stretching in or loading hose.

EVERY TYPE OF PUMP FOR EVERY TYPE OF SERVICE

Refuse Collection and Clean-Up

Trimming the Dumps Now a Machine Job

THE city of Bridgeport, Conn., has several dumps in low spots around the city where selected trash and rubbish is being used as fill. In order to keep the dumps in good condition and level, the Department of Public Works is using a Caterpillar diesel tractor equipped with a LaPlant-Choate hydraulic bulldozer. The machine keeps busy moving from one dump to another on a regular schedule.

The material pushed and leveled is trash and débris of every description, and nothing else seems to handle it as well as this tractor and bulldozer.

Public Cleansing

THERE is much for thoughtful citizens to ponder in the fact that on the same day that Mayor LaGuardia finally put an end to uncontrolled private dumping of refuse in New York a meeting was being held in the city of Vienna attended by representatives of more than a dozen nations of the world to discuss the latest improvements in ways for keeping cities clean. This, the third international conference on public cleansing, is distinguished by the fact that the delegates are, almost without exception, officials in charge of municipal sanitation, and that these officials are, almost without exception, experts chosen for their work because of their knowledge, training and experience. To them New York's still comparatively casual method of disposing of its refuse would seem primitive.

In America the practice is still common of designating political appointees to take charge of what in Europe is termed "public cleansing." Often these men have been high-minded and capable. But ordinarily they lack the technical knowledge of their European colleagues. This is one of the reasons why American practices in public cleansing have been so backward. The task of keeping a city like New York clean is, of course, immense. It has been estimated that in the borough of Manhattan alone nearly five million cubic yards of refuse have to be disposed of each year, exclusive of sewage. If the other boroughs are included, the city of New York has to get rid of nearly thirteen million cubic yards each year—a veritable mountain of ashes and other refuse.

The laws in New York with respect to the removal of refuse are more or less adequate. But the equipment with which the Sanitation Department has to tackle the problem of collection and removal is in many ways inadequate and out of date. This, it must be said in fairness to the Department of Sanitation, is through no fault of the present city administration or of the present Commissioner.

Rather is it a legacy of past neglect and of the traditional American reliance, in municipal administration, on politics rather than on expert ability. There is no premium on improving the technique of public cleansing when it produces neither votes, patronage nor contracts for friends of the politicians. How hard it is to arouse the inhabitants of New York to active cooperation with the officials in cleaning up the city may be seen from the sluggish response to various "drives."

In Europe public cleansing is a highly respected profession. Municipal administrators take great pride in keeping their cities clean. This is particularly noticeable in northern Europe. The cleanliness of the Dutch and Scandinavian towns is proverbial. We here in New York can never rival them. But we can at least profit from their experience and study more carefully what they have done in devising new and effective ways of gathering up dust and dirt from the streets, disposing of ashes, getting rid of garbage and watering and cleaning the streets and sidewalks.

—An editorial from the *New York Herald Tribune.*

Streamlined Trucks for Refuse Collection

THE Department of Sanitation, Rockville Centre, Long Island, N. Y., has recently added four new Mack trucks of somewhat revolutionary design for ash and waste removal. They incorporate several distinct departures from truck equipment usually employed in this field of work and present a combination of attractive appearance and high efficiency.

The new trucks are streamlined, and the bodies, mounted on 176-inch wheelbases, are completely enclosed. Built by Gar Wood Industries, Inc., from Rockville Centre specifications, they are divided into two compartments, one for ashes, and the other for refuse, a method seldom employed. Doors at either end of the bodies provide easy access into either compartment, the lowest doors being only 46 inches from the ground.

Ashes are carried in the front compartment, which has a capacity of 4½ cubic yards, while the rear compartment carries 7½ cubic yards of garbage. The roofs of these new units are used for the storage of empty boxes, crates, broken branches of trees and other materials, by the installation of a chromium railing running around the top of the bodies. These bodies can also be loaded through an opening in the roof. A gangway or catwalk around the upper part of each body gives easy access to this utility roof.

The trucks start out at 7 A.M., first working in the business district and then covering the residential areas, making over 600 stops per unit. An average of 125 cubic yards of garbage and burnable material and 35 cubic yards of ashes is collected daily. Each unit is manned by three men, a driver and two helpers, who quickly unload cans of refuse and ashes from curb to truck. The empty containers are returned to the side or rear doors of the homes, thus leaving the streets clear. A safety factor worthy of note is the fact that these trucks have been painted a brilliant red, which is a warning to passing motorists of their presence at some scene of operation.

More than 30 miles daily are covered by each truck on its collection route and back to the incinerator and ash dump at the Department of Sanitation. A twin piston hydraulic hoist operated by a power take-off dumps the body to the rear. All four of these new Mack trucks are doing a big job efficiently and neatly under the direction of Robert D. Woodcock, Sanitation Commissioner, and Francis J. Klaess and Frank A. Ernst, Trustees of the Board in charge of sanitation.

ONE OF THE NEW REFUSE COLLECTION TRUCKS IN SERVICE IN ROCKVILLE CENTRE, L. I., N. Y.

Honolulu Lowers the Fire Loss!

For Visibility and Accessibility Install Boxes on Pedestals.

Fairchild Aerial Surveys, Inc.

Three-Fold Fire Alarm System
A Profitable Investment in Public Safety

The Gamewell Three-Fold fire alarm system with an increase of 46% in box distribution was installed in Honolulu, T. H., early in 1933. Statistics taken from the fire record of Honolulu for five-year periods preceding and following the installation, are quoted as follows:

	1928-1932	1933-1937	
Fires	2511	3315	Increase 32%
Fire Loss	$700,616—	$326,657—	*Decrease* 53%
Average Loss Per fire	2790—	985—	*Decrease* 65%

WRITE FOR CIRCULAR

Fires extinguished in their incipiency result in low fire losses. Alarms promptly given keep fire losses small. The Gamewell Three-Fold fire alarm system with an adequate distribution of boxes, visibly located at all points of fire hazard, provides the most effective means of accomplishing this result.

Make the Three-Fold Fire Alarm System your city's "first line of defense against Fire!"

THE GAMEWELL COMPANY, NEWTON UPPER FALLS, MASS.

Public Safety

Cities Studying Parking

AS business-district parking problems assume proportions of major economic importance, cities throughout the nation are engaging in street-parking studies in an attempt to remedy their congested parking situations, says the Public Administration Clearing House. The survey of the American Society of Planning Officials and the International City Managers' Association shows that 75 of 147 cities made special studies of street parking in their business districts within the last three years.

A census of parked cars in Spokane, Wash., showed that nearly one-third of the long-time parkers began parking before 9:30 A.M. and that more than one-half of those who parked overtime were employed in the block where they parked their cars. These facts led to the prohibition of all parking in the retail district from 8:00 to 9:30 A.M.

Detroit, after a detailed examination of vehicle storage in the central business district, including off-street parking facilities and curb parking, reduced congestion by prohibiting all parking in the business area during morning and afternoon traffic movement peaks.

When Milwaukee made a study of truck and commercial vehicles passing through the business section, it was found that by-pass routes for this traffic helped clear the streets.

The survey recommended that cities periodically make a thorough study of parking conditions in their business districts.

Drawn for THE AMERICAN CITY

KIN Y' SPARE A NICKEL, MISTER, SO'S I KIN PARK ME CAR?

Police Radio in Small Wisconsin Cities

OF 90 Wisconsin municipalities of more than 2,000 population, 18 are served by police radio in one way or another. Only one, La Crosse, of 39,614 population, has a local city system. Six cities have two-way service with the county, and seven have one-way service with the county.

Cleveland Buys 3,000 Parking Meters

"Safety Director Eliot Ness and Purchasing Agent C. B. Paterson seem to be sold on the manual type," says *Cleveland Press.*

"CITY to Buy Hand-Type Parking Meters" was the principal story on page one of the *Cleveland Press* of February 7—and 3,000 of them are expected to be installed in the near future.

Parking meters were first authorized by Cleveland two years ago, but a mayoralty election sidetracked them, then the specifications had to be written, a rental ordinance passed and then changed to give the Board of Control choice between two types of meters; but recently the decision was made to award contract to M. H. Rhodes, Inc., Hartford, Conn., for 3,000 Mark-Time manual meters because, in the words of the laboratory report, they meet "our interpretation of the intent of the specifications in all essential characteristics." The specifications included both physical characteristics and a series of tests. The price is $19.95 per meter. The bids for automatic meters were $32.50 (also Mark-Time), $43.30 and $49.95. On February 17, a taxpayer's suit to halt installation was dismissed by the Court of Appeals, opening the way for placing the meters in Cleveland's congested districts.

Commenting on good traffic regulation, Director of Public Safety Eliot Ness says that Cleveland's new safety methods, which sharply reduced accidents and fatalities last year, and are continuing to do it this year, are a pronounced success. He believes that metered parking will be successful in Cleveland.

Metered Angle-Parking, White Plains, N. Y.

AUTOMOBILES IN THE NEWS—MOTORISTS ON

EXTEND USE OF METERS

Cities in State Will Test Penny, Nickel Devices For Parking Control

By MERRILL FOLSOM

PARKING meters soon will be installed in scores of cities throughout New York State because of their recent success in controlling parking in the business centers of a half dozen typical cities, it was forecast by William Capes, executive secretary of the State Conference of Mayors, during a recent conference with Westchester officials.

Opposition by merchants and shoppers gradually dwindled after the meters had received fair trials, according to Mr. Capes and other speakers. White Plains completed a six months' trial on Dec. 1 and decided to keep its meters. Watertown, Glens Falls, Oneonta and Auburn have had them for several months, while Newburgh, Geneva and Buffalo have contracted for installations.

Buffalo, Mr. Capes said, plans to try all types of meters manufactured by seven different companies before eventually deciding which to retain.

Times Wide World

Greater use of meters for parking control is forecast in New York State. "Nickel-an-hour" meters in White Plains, above, are pointed out by white arrows in front of angle-parked cars. The city of Auburn makes a charge of 1 cent for twelve minutes.

A LINE OF WELL-PATRONIZED MARK-TIME METERS

The increasing use of parking meters and their success in regulating curb parking, is reflected in the increasing newspaper space devoted to parking meters. The above excerpt is from a recent edition of the *New York Times*

SPRING THAW BARGAIN

The Speed Maintainer, complete with starter and lights for night work, is a year 'round maintenance tool. Can be fitted with snow plow for snow removal. Standard machine, only $1285 F.O.B. Factory.
ALLIS-CHALMERS
ALLIS-CHALMERS

Speed Maintainer Will Clean and Smooth Winter-Rutted Streets and Alleys on One Gallon Gas Hourly... One Man's Wages... Works Fast... Handles Other Jobs, Too.

Now you can clean away the dirt left by the Spring thaw... smooth out and fill in the ruts and chuck holes left by winter travel... re-shape dirt and gravel streets and alleys from gutter to gutter ... at a cost that's a bargain to the taxpayers. Use Allis-Chalmers Speed Maintainers. They take the place of larger blades costing 2 to 4 times more . . . yet require but one man for operating and consume only one gallon of gas hourly. You get more done, too, because the Speed Maintainer works at speeds of $3\frac{1}{2}$ to $4\frac{3}{4}$ miles per hour...travels from one job to the next at 9 or more miles an hour. Drawbar is always free. Use it this Spring to pull tree-spraying rigs... use it the year 'round for handling garbage trailers, small scrapers, mowers, etc. Ask your Allis-Chalmers dealer to demonstrate the Speed Maintainer NOW... see for yourself what it can do.

ALLIS-CHALMERS POWER

TRACTOR DIVISION — MILWAUKEE, U.S.A.

TRACTORS, ENGINES, ROAD MACHINERY

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MARCH, 1939

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The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

Play Space in New Neighborhoods

*Excerpts from a Report Just Issued by the National Recreation Association**

THE present nation-wide public interest in housing is unprecedented. Large housing projects, many of them financed through Federal funds, are being planned and built either by private enterprise or by local housing authorities. Entire neighborhoods are being created, with dwellings which will last for generations.

Well-kept lawns and shrubbery have esthetic value, but they are no substitute for active play space. Unless definite steps are taken to establish properly located recreation areas of suitable size and development in new neighborhoods, cities will be obliged to acquire such areas later at much greater cost.

The committee presents the following recommendations [which are developed in some detail in the report] in the belief that if they are put into effect, a duplication of past mistakes will be prevented, a solution of neighborhood recreation problems will be achieved, and people in new housing developments will be assured a reasonable opportunity for a well-balanced outdoor recreation life.

1. In the initial conception of any housing project, public or private, due consideration should be given to the recreation needs of the people who are to be housed. Since housing and recreation areas involve neighborhood and city planning at the earliest stage practicable, the individual or agency developing the project should consult with the city planning, school, park, recreation or other local municipal agencies responsible for the city's recreation service, and together with these agencies work out a plan for permanent dedication of areas necessary to meet these recreation needs.

2. In every housing development, except where back yards are provided for individual families, *play lots* should be set aside within each block or for each group of dwellings.

3. Within each neighborhood, whether composed in part or entirely of a housing development, there should be a properly situated *playground* of adequate size, suitably developed.

4. A *playfield* should be provided for the young people and adults within easy reach of every housing development, unless adequate playfield facilities are already available.

5. Wherever practicable within housing developments, the space not occupied by buildings should be utilized for the informal recreation of children, young people, and adults.

6. In planning for recreation in housing developments the need of indoor recreation facilities should be considered as well as the need for outdoor recreation areas.

7. Meeting the initial expense of acquiring permanent recreation areas and of developing the facilities does not solve the entire problem. In addition, consideration must be given to the problems of operation, maintenance and leadership.

In many housing developments there has been a tendency to set aside small play areas providing a variety of play activities for children between the ages of six and fifteen. Such areas frequently comprise no more than one-quarter or one-half acre and are often included within a large block or group of dwelling units; sometimes one of these play areas is provided within each large block. Experience has shown that such play areas are likely to prove unsatisfactory because:

(a) They are too small to permit the types of play which appeal primarily to the older boys and girls.

(b) They are too small to permit segregation of the different age groups who are intended to use them.

(c) Their inadequate size permits only a small percentage of those who wish to use them to do so and there is a tendency for the larger boys to usurp the areas.

(d) Located as they are within the courts of housing units, they are likely to be noisy and prove annoying to the tenants.

(e) The cost of constructing several small playgrounds, each with its separate units of apparatus, fencing and other equipment, entails much greater expense than if these play spaces were combined in a single large unit.

(f) The cost of maintaining these many areas is considerable.

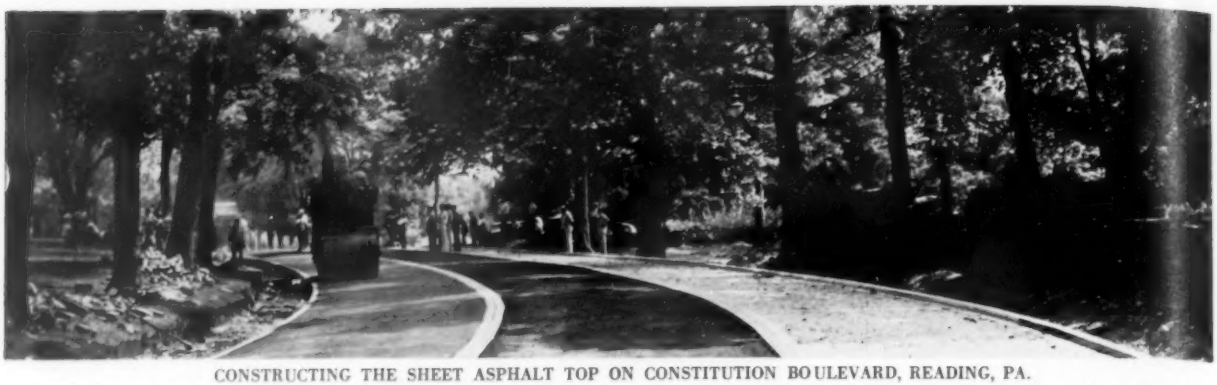
(g) It is impracticable to provide leadership on these small, widely-scattered play areas, yet leadership is essential to their satisfactory use.

Therefore, in providing playgrounds either for a neighborhood or for large housing developments, an attempt should be made to develop a single large playground which will afford opportunities for a variety of play activities, which can be arranged on a functional basis permitting segregation of different age groups and different types of activities, and which will at the same time eliminate the objections to the smaller play areas for older children.

* At the National Recreation Congress held in Pittsburgh during October, 1938, the newly formed Society of Recreation Workers of America passed a resolution calling upon the National Recreation Association to appoint a committee to report on reasonable standards of size, location, and type of outdoor recreation areas which should be permanently reserved near or within new housing units.

As members of this committee the Association appointed Clarence E. Brewer, Recreation Commissioner of Detroit, E. Dana Caulkins, Superintendent of Recreation, Westchester County, New York, and George D. Butler of the National Recreation Association, Chairman. An Advisory Committee, representative of the American Institute of Architects, American Institute of Planners, Federal Housing Administration, National Association of Housing Officials and United States Conference of Mayors, consisted of: Frederick J. Adams, Professor of City Planning, Massachusetts Institute of Technology; F. Ellwood Allen, Specialist in Recreation Facilities, National Recreation Association; Charles S. Ascher, Secretary, Committee on Public Administration, Social Science Research Council; Louise P. Blackham, Recreation Consultant, Hillside Homes; W. Burke Harmon, Real Estate Operator; Seward H. Mott, Chief, Land Planning Division, Federal Housing Administration; and Clarence S. Stein, Architect.

Copies of the 24-page report are available at 25 cents each from the National Recreation Association, 315 Fourth Avenue, New York.



CONSTRUCTING THE SHEET ASPHALT TOP ON CONSTITUTION BOULEVARD, READING, PA.
At left the roller is compacting the top course of sheet asphalt, the binder course is seen in the center lane and the concrete base at the right, each separated by a white concrete lane-marking stripe

Features of Design and Construction of Constitution Boulevard

Important Link in the Reading Street System Rebuilt

By E. CLINTON WEBER
City Engineer, Reading, Pa.

CONSTITUTION Boulevard traverses Reading's City Park, the Penn's Commons of the Colonial Period, and is used by the major portion of the traffic between Philadelphia and the anthracite coal regions of Pennsylvania. It is at the immediate base of the slope of Penn's Mount, practically in curved alignment throughout its length of one quarter-mile, and forms the connecting highway between the rectangular street systems at its terminals and is also a major part of the city's park roadway system. A portion of the present roadway location, more than half a century ago, served as a portion of a horse race course of an early agricultural fair ground.

The artificiality of the subgrade soil for the race course, combined with poor natural subdrainage, made this a low-grade sub-base for a park drive constructed of a thin layer of crushed stone which in more recent years was surface-treated with oil. The resultant structure was an unsatisfactory riding surface requiring considerable costly annual maintenance.

Last September the municipal employees of the Bureau of Highways, Department of Streets and Public Improvements, under Director Stewart E. Tomlinson, from the designs and under the engineering supervision of the author, constructed a concrete base roadway of three 10-foot lanes surfaced with natural asphalt and having the necessary drainage facilities. Mastic jointed and cushioned hillside brick paving on a concrete base was used at two bad grade intersections.

Several structural innovations were introduced to reduce maintenance to a minimum, as well as to prolong the service life of the project. These included copings or curbs built on each side of each 10-foot strip, using diatomaceous earth, white sand and white cement; uniformly spaced, transverse, premolded cork-rubber expansion joints poured in place and extended through the entire depth of the concrete base and the sheet asphalt surfacing; vertical weepers extending from the surface of the concrete base into the subgrade to dispose of any moisture getting through the sheet asphalt surface; slotted vitrified pipe installed 3 feet below the surface was laid under the entire length of the hillside shoulder of the concrete base, with frequent inlets to collect surface run-off, as well as to prevent any ground water from getting beneath the subgrade. A dense bituminous mastic was placed along the edge of the concrete base to further prevent seepage of surface water into the subgrade. A 4-foot shoulder was built adjacent to the permanent roadway throughout its entire length. This consists of about 8 inches of compacted crushed stone on which is spread fine aggregate admixed with a rapid-curing cutback asphalt as a cold mix. A shallow valley in the shoulder is used to direct the drainage into the collection system.

The road intersection returns at two points of the project were constructed with a 6-inch cement concrete base on which a ¾-inch cushion of hot asphalt mastic was raked and then compacted by rolling. On this the wire-cut hillside paving block was laid in herringbone design to afford the maximum traction for vehicular traffic. The top surface of the brick was treated with sodium silicate to facilitate the removal of the excess bituminous joint filler, which was applied at the maximum allowable temperature to secure full penetration of the asphalt in the joints.

Two normal grade intersection returns were built with a reinforced concrete base and surfaced with standard two-course sheet asphalt paving. In each intersection return a permanent white concrete side coping, center line, pedestrian crosswalk and the traffic regulation word "Limit"

in 6-inch long letters was constructed. A permanent white line pedestrian crosswalk was also constructed in the vitrified brick paved intersection return.

Materials of Construction

The concrete for the base was purchased by contract and consisted of a 1:2½:5 mixture. The mixtures of white cement were prepared at the site of construction by city employees. Special care was paid to the selection of the white sand for this mixture, particularly as regards its size grading. It was found that in order to obtain a white cement sand mortar of maximum density it would be advisable to blend certain New Jersey white sands. This plan was followed, resulting in a formula-controlled mixture of white New Jersey sand, cement and diatomaceous earth, the latter being added to increase the workability in the finishing process. This mixture was applied immediately after the gray concrete base course and finished as soon as possible thereafter. Immediately after the tool finish was completed, the surface was painted with a sodium silicate compound, and then a second application was made in order to protect the white surface from discolorations that might occur during the application of the asphalt binder and surface courses.

The expansion joint construction was carefully handled to avoid exuding of the joint material, which frequently occurs in poured-in-place joints as well as in some premolded types. This led to the selection of a processed cork-and-rubber premolded type made by Servicised Products Corp. of Chicago. Because of the flexibility of this joint filler material, which extends through the entire depth of the base, binder and surface, it was necessary to protect the asphalt surface from spalling at the expansion joints. Immediately adjacent to the transverse expansion joints on both sides, the asphalt top was removed for ¼- to ½-inch and a depth of 1 inch and this space filled with a low-penetration poured asphalt joint filler material.

For the asphalt paving, native Bermudez and Trinidad asphalt was used throughout, with careful mixing of the asphaltic cement and aggregate at suitable temperatures.

Since no reliable records were available showing the location of subsurface lighting, sewer and water structures, a thorough magnetic exploration was made to locate them prior to construction, which resulted in the renewal of water pipes and the removal of parkway lighting cables from under the improved roadway surfaces. This was aimed to prevent the need for disturbance of the new roadway structure in the immediate future.

The Bureau of Highways personnel is organized fundamentally for highway maintenance and has not engaged in construction of this type heretofore, but handled the construction effectively and economically.

Costs

The funds for labor and material for the construction of the project were provided by the allocation of $23,000 for road improvements and $7,000 for drainage structures. The analysis of the cost shows the average unit cost:

Equipment:	
Ten per cent charge-off of forms, etc., purchased to supplement Bureau of Highways equipment	$.28 per sq. yd.
Labor (all classifications) for all phases of construction materials:	1.66 " " "
Materials	
Concrete for base	1.52 " " "
Concrete base appurtenances	.13 " " "
Permanent white traffic lines	.135 " " "
Two-course sheet asphalt (3") surfacing	.53 " " "
Brick surfacing including asphaltic cushion	.23 " " "

The average cost of the concrete base with its asphalt surface complete was $4.25 per square yard.

The cost of 13.5 cents per square yard for the permanent white traffic lines expected to last for at least twenty-five years is the equivalent of the approximate cost of hand-painted traffic lines for a period of only five years. The economy of built-in traffic lines is estimated to represent conservatively 15 per cent of the entire cost of the improved permanent pavement.

Paving City Streets
Residential — Business — Boulevard
See the series of articles on how various engineers handle the problem, in the 1939 Municipal Index.

SETTING BRICK BETWEEN WHITE CONCRETE TRAFFIC LINES AT AN INTERSECTION ON THE CONSTITUTION BOULEVARD PROJECT IN READING

Flexible Treatment of Water Checks Tastes and Odors

Upland Supply of Chicopee, Mass., Well Handled in Overloaded Filtration Plant

SINCE the completion of the new dam and impounded water supply of Chicopee in 1927, the filtration plant, constructed in 1932, has been called upon to carry an annually increasing load. Designed for 5-mgd capacity, it regularly delivers 5.6 mgd to the distribution system. Aeration, pre-chlorination and activated carbon treatment when required have spared the consumers trouble from tastes and odors.

The supply is secured from the Cooley Brook reservoir of 150-mg capacity created by the dam. The new dam consists of a concrete core wall resting on a 53-foot steel sheet piling cut-off wall and flanked up and down stream by substantial earth embankments. Additional storage is provided by the old 3-mg Cooley Brook reservoir just below the new dam, and by the Morton Brook reservoir. The old reservoir is very high in color, but can be used in times of low water. The Morton Brook supply is not connected with the filtration plant and is treated solely by chlorination. It is not used except in case of emergency.

A PANORAMA OF THE COOLEY BROOK RESERVOIR, CHICOPEE, MASS.

The Cooley Brook reservoir is completely surrounded by a city-owned watershed which has been carefully planted with pine and other evergreens and all swampy areas cleared to reduce the load of color on the plant. The drives through the reservation, which includes 1,400 acres, have been well graveled and constitute an attractive park. A CCC camp located nearby has aided greatly in the clearing of the watershed, particularly a swamp area at the headwaters of Cooley Brook which contributed high color to the water. A temporary dam across this swamp cut it off from the supply and enabled the men to clean out certain deciduous trees which were contributing to the high color. Improvement of the drainage within the swamp area is expected to effect considerable reduction in the color of the water from that section. The growth of micro-organisms in the reservoir is controlled by copper sulphate applied by dragging gunny sacks of the chemical through the water behind an outboard motor-boat.

Aeration and Sedimentation

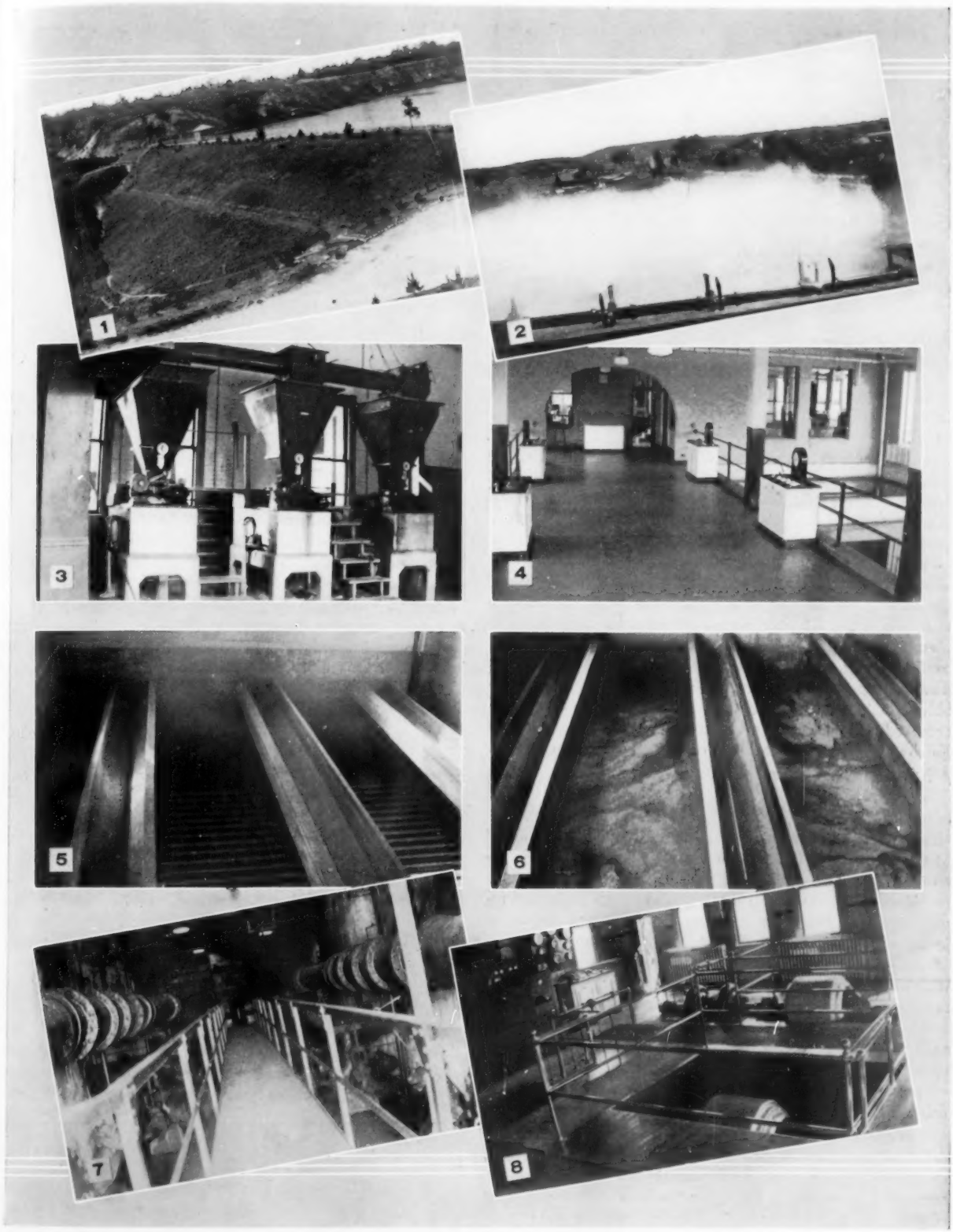
From the dam to the gate-house the water flows through a 30-inch cast iron pipe, and between the gate-house and the plant through 16- and 20-inch cast iron lines which converge into a 30-inch line just ahead of the aerator. The aerator consists of a battery of 36 Spraco nozzles mounted on the roof of the sedimentation basin, 68 feet square. Surrounded by a brick wall, little water is lost through wind action, and the CO_2 is reduced from 5 to 2 ppm. The odors are also materially reduced by the aeration. The water from the aerators flows to a collecting trough at one end of the roof to two mixing chambers, in each of which is a Foote Bros. Gear Works agitator operating at 12 rpm. These chambers may be operated in series or separate. The alum is applied between the aerators and the mixing chamber. Aeration is used for treatment of the water only between March 15 and December 15. During the colder months the odors are not as intense and, further, the spray would make too heavy a load of ice on the roof of the settling basins.

Following the 15 minutes mixing in each of the mixing chambers, the water flows to the sedimentation basin, where it has a detention of only two hours. The basin is divided into two parts by a division wall for cleaning, and each section has concrete baffle walls about 6 feet from the ends, with 2-inch holes to control the flow of the water and prevent short-circuiting of the flow.

During part of the year lime is added to the effluent of the mixing chamber for maximum efficiency in operation to reduce the CO_2 and to increase the alkalinity of the treated water. Otherwise the lime is applied to the water as it enters the clear well. This has not resulted in any noticeable deposit in the clear well.

Filtration

The plant is equipped with six 833,000-gallon-per-day filters of the rapid sand type. A 24-inch cast iron pipe line leads from the sedimentation basin to the filter pipe gallery. The filters have a concrete manifold with Norwood brass laterals 2½ inches in diameter and 16 feet long, 32 to the filter. The laterals have 5/16-inch holes



THE CHICOPEE WATER SUPPLY, FROM RESERVOIR TO PUMPS

1. The Cooley Brook dam, showing the gate-house and spillway. 2. The aerators on the roof of the sedimentation basin. 3. The battery of chemical dry feed machines. 4. The filter room, showing the control tables. 5. A filter unit before gravel and sand were placed over the underdrain system. 6. A filter after the sand was in place. 7. The pipe gallery between the two rows of filters. 8. The pump-room, showing the panel board, the venturi meter registers, the multi-stage centrifugal pump and synchronous motors. All photographs taken by E. J. Lavallee, Chemist in Charge of Filtration

spaced 3 inches apart on a 60-degree center in the bottom of the pipes. Over the laterals is 18 inches of gravel and 24 inches of sand. There is 24 inches of freeboard from the sand to the top of the wash-water troughs.

The filter runs are from 3 to 25 hours, with an average from 7 to 8 hours. Wash water is provided by a 60,000-gallon Pittsburgh-Des Moines steel elevated tank behind the plant, and washing is done at 2 gallons per square foot per minute, giving an expansion of the sand of 25 per cent. The rate of flow of the filters is controlled by Builders Iron Foundry rate-of-flow controllers, and each filter has a Norwood hydraulic control table with Builders Iron Foundry indicating and recording rate-of-flow and loss-of-head gages. The wash-water tank is supplied from the main line to the distribution system, and the filling is controlled by a Golden-Anderson altitude valve.

Chemical Treatment

The chemical room is located on the same floor as the laboratory and the filter operating gallery. Storage is provided for about one carload of chemicals at a time. Three Municipal Service Co., of Philadelphia, dry chemical feeders are installed in the chemical room. A Link Belt bucket elevator with lateral distribution by a trough feed carries alum from floor level to the trough and thence to the first of the machines. The second or middle machine is used for a variety of chemicals as needed, including lime, alum or carbon. The third machine is used entirely for lime.

A Wallace & Tiernan sight feed vacuum chlorinator is installed in the laboratory and is used to deliver from 2 to 5 pounds of chlorine per million gallons of water. There is no split treatment with the chlorine, but if pre-chlorination is used, a machine is borrowed for the period required. The chlorine cylinders are weighed regularly on Fairbanks platform scales to check the flow of chlorine.

Nuchar activated carbon is used at rates varying from 5 to 15 pounds per million gallons. When pre-chlorination is used, the chlorine is applied to the influent of the mixing chamber and the activated carbon is applied to the effluent of the mixing chamber. Without pre-chlorination, the activated carbon is applied at the outlet of the alum feed machine. The use of the carbon is not regular, as the requirements do not demand it, but the maximum use comes in the early spring when the ice is breaking up on the reservoir. The color of the raw water varies from 30 to 200, with an average of 70, while the effluent varies from zero to 40 with an average of 5.

Alum is fed to the water at about 100 pounds per million gallons in winter and increased to a maximum of 360 pounds in spring and fall. Lime is used at 60 pounds per million gallons in winter and 125 pounds in the spring and fall when the alum demands are higher.

The effective combination of delivery pipes at the chemical feed machines makes it possible to apply any of the chemicals from any of the machines to the effluent of the settling basins, the influent and effluent of the mixing chamber, or to the clear well. By running the water supply of the machine at a high rate, the chemical may be applied through the overflow direct to the mixing chambers.

There is some iron in the water as received at the plant, but this 0.3 to 0.4 ppm is reduced to a trace as a result of the aeration and filtration. The clear well of the plant has a capacity of 270,000 gallons and is equipped with a white tile lined sight well in which there is 13 feet of water. The sight well shows no stains of iron. It is equipped with a submarine light.

Laboratory

The plant has a large and well-equipped laboratory for the complete control of the purity of the water supply. It has full microscopical equipment, bacteriological equipment, as well as standard chemical and physical testing equipment.

Pumping Station

The pumping station for the water supply is located under the same roof as the filtration plant. It is the old steam plant converted into electric drive. The old boiler room of the pumping station is now the chemical room of the new filtration plant.

The pumping equipment consists of a Worthington 2-stage centrifugal pump driven by a 300-hp General Electric motor. This motor was recently re-wound, having carried the load of continuous pumping since 1922. At the same time a new shaft was put on the pump. An auxiliary pump for fire service is installed adjacent to the regular pump. It is a Worthington 9-mgd centrifugal driven by a 600-hp General Electric motor. Pumping is continued for about seventeen hours daily in hot weather and fourteen hours in winter. The pumping station and filtration plant is 4½ miles from the center of the city. A 16-inch cast iron line extends to the Keating Hill standpipe. A 20-inch line also runs to the standpipe by another route as well as to the city.

The original Keating Hill standpipe was erected in 1893 of wrought iron by the Walsh Boiler Works of Holyoke, Mass. It is 60 feet high and 60 feet in diameter and has a capacity of 1,043,000 gallons. The new standpipe at the same location was erected in 1917 and the old unit discontinued in service. The new standpipe is 130 feet high, 50 feet in diameter, of steel, and has a capacity of 1,900,000 gallons. It also was erected by the Walsh Boiler Works of Holyoke, Mass. A third standpipe on the system is located in Fairview and is 80 feet high and 30 feet in diameter, and has a capacity of 188,000 gallons.

The water works of Chicopee are operated by a Board of Water Commissioners, for which George Webster is Superintendent. The filtration plant is operated by E. J. Lavallee, Chemist in Charge. The filtration plant was designed by Morris Knowles, Inc., consulting engineers, of Pittsburgh, Pa., and was built by Dineen Engineering Co. of Lynn, Mass., with Norwood Engineering Co., Florence, Mass., contractors for the filtration equipment. T. R. K.—905.

An Absurdity of the Sales Tax

A MYSTIFIED Brooklyn housewife, seeking enlightenment, writes this letter published in *The New York Sun* for January 21, 1939:

To the Editor of The Sun—*Sir:* How come all this talk about eliminating the slums of New York City while we have to pay a tax on soap, cleansing powder, &c., at our grocer's?

Margaret B. B. Morris.

Brooklyn, N. Y.

Pittsburgh Begins to Rebuild

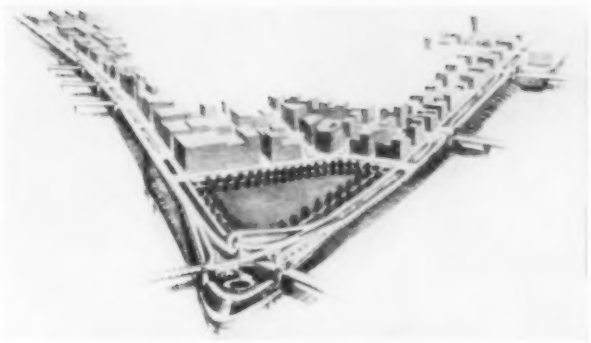
Work Started on Extensive Waterfront Development

FOR over 40 years, waterfront improvement has been advocated for Pittsburgh. But not until the last days of 1938, and after overcoming what seemed almost insurmountable difficulties, was construction actually begun on waterfront boulevards.

The drawing below indicates the magnitude of the improvement project. Only a portion of the complete plan has been approved to date. The top illustration shows the proposed continuation of these portions now under construction, around The Golden Triangle formed by the meeting of the Monongahela and Allegheny Rivers. Present ramp approaches to the two bridges would be lengthened and made less steep, and there would be grade separations of the two converging boulevards at the bridgeheads.

Part of the City Planning Commission's master plan for the improvement of the major street system, the boulevards will relieve downtown traffic, and provide fast traffic arteries circuiting the center of town.

One of the principal questions before the city is how the park area of the Point should be developed. The Point is of great historical significance, being the site of old Fort Duquesne and Fort Pitt, and the spot on which George Washington camped as a young surveyor, at the age of twenty-one. In the top illustration, the area that is proposed for Point Park has simply been shaded in and bordered with trees.



STUDY FOR LOWER TRIANGLE DEVELOPMENT

One possible plan would divide the park into two gardened terraces at separate levels. Under the upper terrace would be museum rooms and historic exhibitions. The whole area would be high enough to overlook the rivers and bridge approaches.

The story of the adoption of the plan for the present construction is a refreshing and cheering one. The approval of nine city, county and Federal bodies, as well as numerous civic organizations, and associations representing special interests, had to be obtained before the program could go forward. Most of these bodies had approved the plan, and it looked as though the project would soon be under way, when, around the middle of November, the river interests of the city objected to the plans. Actual construction had to begin before January 1, 1939, or the Federal grant would have been withdrawn. A conference was held between these navigation interests and city, county and planning officials, and the former finally agreed, in the public interest, to forego certain advantages to themselves. On December 28, work was started on the waterfront development.

Cincinnati's New 200-Acre Sports Field

Varied Recreation for All Ages, by Day and Night

By TAM DEERING
Director of Recreation, Cincinnati, Ohio

CINCINNATI'S outstanding recreational event of the past year has been the opening of its 200-acre Airport Sports Field—an instantaneous success. Although far from completion and lacking in many necessary facilities, it is already paying its own way.

Every one of the points in the Recreation Commission's program for this sports field is being realized:

1. A recreation field with abundant facilities, easily accessible to all.
2. Games for adults on the "cafeteria style."
3. A place where the whole family can play together.
4. Recreation for groups, including neighborhood, lodge, church, labor union, and social organizations.
5. Sports suitable for mixed groups, especially youth.
6. Games suitable for those of advanced age.
7. No waiting in order to play.
8. Supervision of children's play in order to accommodate parents at play.
9. Emphasis on participation, and minimizing "spectatoritis."
10. Emphasis on wholesome good times together, not on winning teams.
11. A sports center for adults that pays its own way.
12. An environment of beauty in which to play.
13. Provision for bicyclers, with miles of trails on level ground but no contact with motor vehicles.
14. Recreation on a large scale at night to accommodate those who lack the time to play by day or cannot endure the heat.

At the Airport Sports Field the recreation facilities are laid out in the midst of a 200-acre meadow, with open skies, long vistas and forested hills in sight at all times.

Already fifteen different sports are available, and ten or fifteen more are to be added in the near future. They include archery, badminton, baseball, bicycling, children's playground, gardening, golf driving, horseshoes, picnicking, pony rides, softball, table tennis, lawn tennis, and volley-ball.

Besides the main purposes, subsidiary objects are being accomplished by the Airport Sports Field. The children's playground is serving a large district in the vicinity heretofore unserved, because of the long, thin lines of the population along Columbia Avenue in the vicinity. Another gain has been the large amount of garden products by the several hundred gardeners, who have each year garnered approximately $25,000 worth of vegetables. The gardens have been carried on under the Community Gardens Association with the cooperation of the Recreation Commission.

If the Commission had accomplished no other purpose than to provide a safe place for bicyclers, the Airport recreational development would have been abundantly worthwhile. In the laying-out of the bicycle trails the Commission has avoided straight lines and has created the feeling of a country road amid great open spaces. In a city with so much topography as Cincinnati, it is most fortunate that the Commission has the control of a property providing not only for the 3½ miles of trails already constructed on comparatively level ground, but also the opportunity to add many miles when the project is fully constructed.

A strong change in public feeling has followed the opening of this great recreational area. Indifference and skepticism have given way to enthusiasm. For several years the Recreation Commission carried forward its plans for the development of the project in the face of severe criticism and against almost insuperable obstacles. Never having seen such a layout, people had not had the imagina-

AUGUST 17, 1938—ALL TENNIS COURTS FILLED AT 9:00 P.M. UNDER THE LIGHTS AT THE CINCINNATI AIRPORT RECREATION FIELD

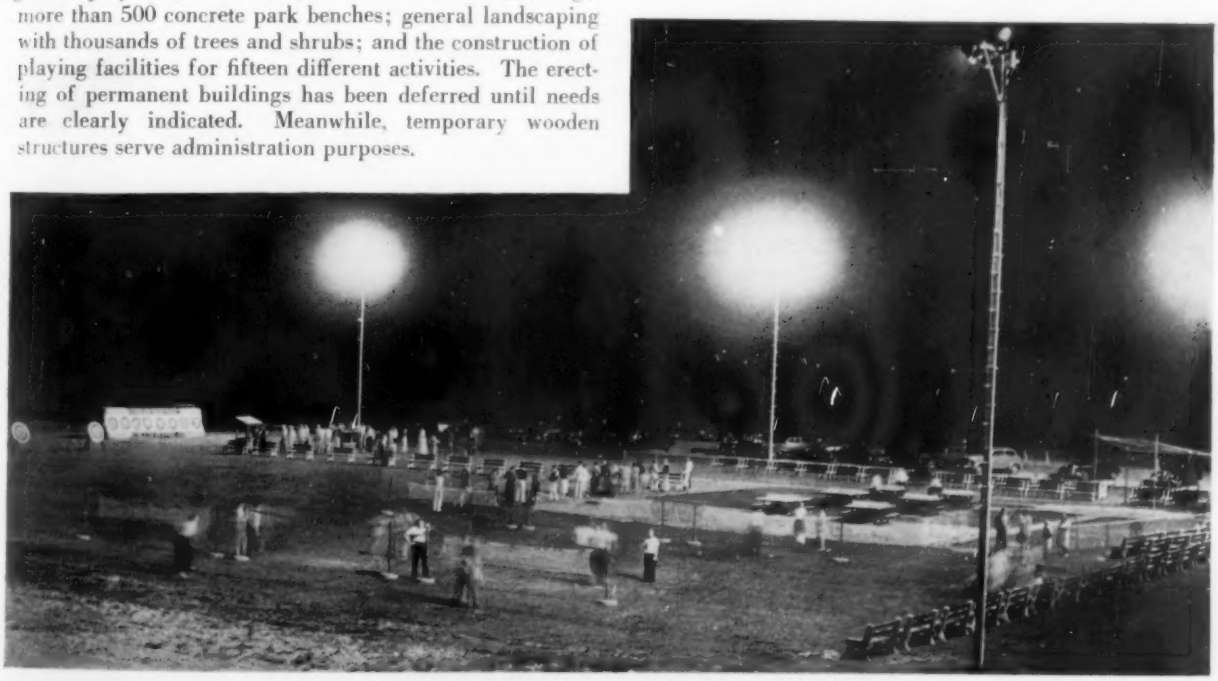
tion to picture to themselves its purpose and possibilities.

The Commission owes a great debt of gratitude to all members of the City Council and to those local, state and national WPA, FERA, and CWA authorities who have stood by the Commission during the several years necessary to bring the Airport Sports Field to its present state of development. Something of the magnitude of the task can be understood by those who realize what it requires to raise more than 30 acres of land 2 feet in the air, and this was only one of the many heavy construction items in this project. It has long been the desire of the Public Utilities Department and of the Highway Engineer to raise the low-lying Beechmont end of the Airport to a certain grade. Approximately thirty acres of the area have been brought to this grade under the Recreation Commission projects.

In addition, there have been completed the following: 1½ miles of combined roadway and parking area, 100 feet wide, with heavy gravel base; a mile of water lines with seven bubblers; an electric lighting layout with a capacity of 163,000 watts to service sixteen tennis courts, general play area, rest rooms, and administration building; more than 500 concrete park benches; general landscaping with thousands of trees and shrubs; and the construction of playing facilities for fifteen different activities. The erecting of permanent buildings has been deferred until needs are clearly indicated. Meanwhile, temporary wooden structures serve administration purposes.

CHAIN LINK FABRIC FENCE CONSTRUCTION

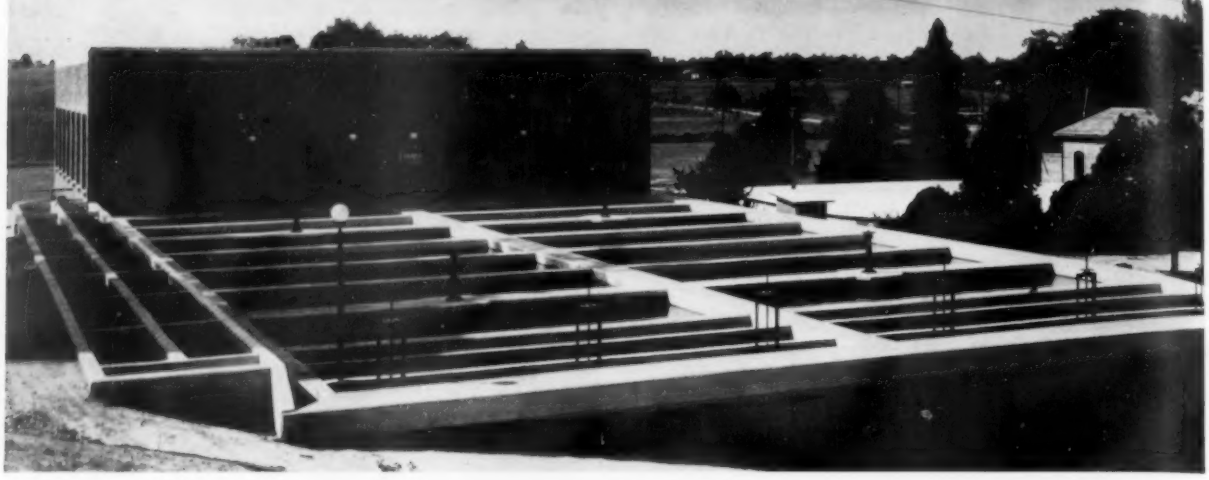
Erecting framework and tightening tension bands over the center gateway on the tennis courts



GAMES UNDER LIGHTS AT THE AIRPORT RECREATION FIELD

Eight close archery targets with balloons hung over the bull's-eye, and several longer-range archery targets. Note the archery group. In the foreground are badminton courts, and beyond the ping pong tables. This spot is adjacent to the tennis courts

Good Design and Operation Characterize Greenwood, S. C., Water Works



Some Novelties Make This New Water System Outstanding

GREENWOOD, S. C., a city of 11,000 population in the western part of the state, 75 miles from the capital, Columbia, is an independent community owning its water and light systems but purchasing power from the Duke Power Co. It is interesting to note that Greenwood is the only city in eastern United States south of Washington that has sodium unit highway lighting installed by the city on one of its main streets.

The city has three sources of water: Coronaca Creek about five miles from the city, which is used as the main source; Rocky Creek, at the plant but, being more polluted, not used except as an auxiliary source; and several wells near the plant which are so high in CO_2 that their use is excluded. The plant itself is directly north of the city, about 1¼ miles from the center of the business section. An elevated tank of 300,000 gallons capacity rides on the distribution system near the center of the business section but on the side opposite from the pumping station at the plant. The tank is 165 feet from the top to the ground level. It was necessary to add 40 feet to the height of the tank because of the choice of location on ground lower than that originally selected. The tank replaced an old standpipe having a total capacity of 200,000 gallons, but of which only 30,000 gallons was useful storage. The bottom elevation of the new tank is at the elevation of the top of the old standpipe; thus the city gained 25 feet in pressure by the installation of the new tank.

The distribution system is entirely cast iron except for some 2-inch galvanized steel pipe. The remainder of the system is 4- to 12-inch cast iron pipe with only a few short sections of 4-inch pipe. Only last year about 800 feet of the old 4-inch line was removed where it was already paralleled by a 12-inch line. The pipe is laid in the park strip between the curb and the sidewalk, but in several cases the Street Department has widened the roadway, and the pipe has thus been placed under the road or curb.

The services are practically 100 per cent metered, the only exceptions being a few Negro houses where there are no plumbing facilities. The metering program was started prior to 1930.

The River Pumping Station

The new filtration plant, constructed in 1936, is located in 90-acre Oak Hill Park, where the city is developing a 9-hole golf course. The raw water comes to the plant through 22,500 feet of 16-inch cast iron pipe from the automatically operated river pumping station, which is equipped with a 700-gpm Worthington centrifugal pump driven by a 25-hp General Electric motor. The control or automatic priming device used at the river pumping station is unique. The pump has no foot-valve but is equipped with a check-valve on the discharge line. When the line switch is thrown at the filtration plant, it starts a small Nash Hytor rotary vacuum pump which primes the pump in about 50 seconds. The hook-up is interesting. On top of the pump casing is a 1-gallon tank with a gage on top through which the vacuum is taken. This is connected to a 30-gallon hot-water boiler which is used as a vacuum tank and from which the Hytor pump takes its suction. On top of the 30-gallon tank is a vacuum gage with a contact set to start the relay for the pump motor when the

vacuum reaches 13 inches. The large tank acts as a cushion on the system and thus prevents a series of sudden starts and stops.

The Filtration Plant

The water enters the filtration plant from the 16-inch pipe into a flume over which are mounted, on a platform, two Omega dry feed machines used to feed from 0.75 to 2.5 grains per gallon of alum to the water. Plans have been made to pre-chlorinate the water and also pre-ammoniate it, but at present the treatment for bacteria control consists only of chlorination of the filtered water on the way to the clear wells.

Outside the filter building is a double flume with over and under baffles extending the full 90 feet of the side of the duplicate coagulating basins. The water requires about 30 minutes to pass through these mixing channels, and reaches the end with a good floc, even when the turbidity is low. The flume then crosses the ends of the coagulation basins, and the water enters the basins through three sluice-gates in each basin and through a stilling wall with a number of small circular ports which have been supplemented with a large 3 x 5-foot hole in the bottom of the wall. Each of the basins has two blow-off plugs in the bottom for washing out the accumulated sludge every four months.

One of the novelties in this plant, and one which we believe to be unique, is a separate pump installed in the filter building for transferring the water from one of the coagulating basins to the other, or to the flume leading to the filters. Each of the coagulating basins contains a half-million gallons of treated water which the Superintendent who installed the pump believes should not be wasted just because the basin is to be washed. As the lift is not high, the 1,000-gallon Worthington pump is driven by a 7½-hp GE motor, and it also has a standby 4-cylinder Continental gas engine. Thus, if the river line is down and the power is off, the plant can still have 400,000 gallons in its coagulating basins available for use. The suction of the pump is about 3 feet off the bottom of the basins so as not to take in any of the deposited sludge.

Another novelty in operation is found at the coagulating basins. When they are filled after washing, the drop of the water from the influent flume to the bottom of the basin has been found to completely break up the floc. This has been overcome by bleeding water from the full basin through the bottom clean-out plug-valves into the empty basin and thus preserving the floc.

From the coagulating basins the water flows over a stilling wall one foot beneath the surface of the water and through three sluice-gates into the flume leading to the filters. All filter valves are hydraulically controlled. An American Water Softener Co. control table operates all the hydraulic valves for the filters, and a Builders Iron Foundry rate-of-flow and loss-of-head gage mounted on the table shows the condition of the filters.

There are two filters, each of ¾-mgd capacity but operated at ½-mgd through the Builders Iron Foundry rate-of-flow controllers. The filters are equipped with concrete filtered water conduits 12 inches wide by 24 inches high, and in the tops of these are 2½-inch bronze tees with 2-inch copper laterals leading to each wall and capped at the ends with slip jointed caps, no solder being used in the system. The laterals have ⅜-inch holes along the bottoms of the pipes on the 45-degree quadrants.

During the spring a considerable number of fish eggs are pumped through the line from the river pumping station, and they hatch out in the coagulating basins. There have been as many as 200 fish in each basin during the early summer. Their great advantage to the system is that they keep the basins free of algae. Occasionally one of the fish gets through onto the filters, the largest being one about 4 inches long, engineer's measure, not fisherman's.

The filter bed is 30 inches of graded gravel and 30 inches of sand. The filters run from 50 to 125 hours between washings. When the water in the river is clear and the color is running from 30 to 40, the filter runs are shorter. This means that at any time of year when the flow is low owing to dry weather, the filter runs shorten. A 3-minute wash at the rate of 8,000 gallons per minute is used, the water coming from the wash-water tank on the hill back of the plant. This 60,000-gallon tank was installed by the Chicago Bridge and Iron Co. The concrete wash-water troughs, two to a filter, are built with the tops 24 inches above the filter bed. A gage on the filter operating floor shows the pounds of pressure in the wash-water tank.

The filtered water flows to a single header where the chlorine is added at 0.2 ppm. About 0.9-grain of lime per gallon is added to the water from the filters just beyond the chlorine line. As the filtered water has a CO_2 of around 16, it requires this to reduce the corrosive quality of the water. The finished water goes to one end of a 1.25-mg clear well which is connected with the smaller 0.25-mg clear well by two cast iron pipes, a 12-inch and a 20-inch line. As operated at present, the water crosses from the larger clear well to the smaller through the 12-inch line, and the suction from the high-pressure pumps is taken from the 20-inch line. This leads to a suction flume or pit 6 feet wide and 12 feet deep running the entire length of the pump-room. A gage at the end of the flume shows the depth of the water in the flume and also in the clear wells. The clear wells are rectangular, built of concrete, and have corrugated asbestos roofs. They are screened at the ends, but even with this the water sometimes shows hay bacteria on the plates.

Pumping Equipment

The filter pipe gallery opens directly onto the pump-room, and both have tile floors. None of the pumps installed in the plant have foot-valves except the large fire

THE FRONT AND SIDE OF THE FILTER BUILDING AND PUMP-HOUSE, GREENWOOD, S. C.

pump, but there is a priming system consisting of a Nash Hytro vacuum pump, and also a water jet for producing a vacuum if desired. The smallest pump in the plant is the wash-water pump, a 3-inch Worthington with a 7½-hp GE motor.

On the service to the city there are two 400-gpm Worthingtons with 40-hp GE motors, one 6,000-gpm Worthington with a 60-hp GE motor which was moved from the old plant, one Worthington 700-gpm pump with a 75-hp GE motor, and a standby pump of 1,500-gpm capacity driven either by a 180-hp Sterling gas engine or a 150-hp induction motor. This unit is turned over once a week.

The water at the plant is measured by a Builders Iron Foundry Chronoflo meter on the influent from the river pumping station, and the discharge of the pumps to the city is measured by a straight Builders venturi meter.

The pumps discharge into a 16-inch cast iron header pipe located just outside the walls of the plant. Just in front of the wall of the plant a panel of the tile floor is made so that it may be removed over the connection of each pump discharge where it goes through the wall. Each pipe going through the wall is packed in asphalt and not solid in the wall. From each end of the header is a 6-inch by-pass so that water can be fed to the 10- and 12-inch lines to the city without passing through the venturi meter.

The Laboratory

The laboratory is equipped to do the necessary chemical and bacteriological work for the control of the plant. It has an electric Hot Point stove, the top of which is used for the cooking necessary, and the oven of which is used for the dry sterilizing of petri dishes and sample bottles. A small TVA General Electric refrigerator serves to preserve the media after it is sterilized in a pressure cooker. There are five sampling taps in the laboratory—filtered water, raw water, mixed water, settled water, and finished water after the addition of the lime.

The tests made regularly in the laboratory include CO_2, alkalinity with methyl orange, turbidity when over 25, soap test for hardness, and bacteriological tests. The CO_2 in the raw water runs between 8 and 13, in the filtered water from 15 to 19, and in the tap water after the addition of the lime, zero.

THE PUMP-ROOM, SHOWING THE HIGH-SERVICE PUMPS IN THE FOREGROUND, THE STERLING STAND-BY GAS ENGINE IN THE BACKGROUND, AND THE FILTER PIPE GALLERY AT THE RIGHT

In the laboratory is a large gage connected to the influent line. When the influent line is open and water is entering the plant, it shows zero, but when the influent valve is shut and the pump is shut off, the pressure recorded is 13 feet. If the plant is shut down and the valve is shut and the pressure on the gage starts to drop, it indicates a leak in the pipe line somewhere between the pump station and the filtration plant. When this has occurred, the noting of the drop on the gage saved many hours of lost time.

There is a 30-foot differential between the high point on the line and the discharge elevation at the filtration plant. This requires that the valve at the plant be shut when the pump is shut off or there would be a constant dribble of water into the plant. This high point is about 300 feet from the river pumping station, and when the plant is operating up to 18 hours a day this long leg of the siphon aids the pump in increasing the amount of water pumped. If the plant is operated 20 to 24 hours a day, air pocketing occurs and stops the siphon action.

The new filtration plant was placed in operation June, 1935, under the direction of F. W. Chapman, Superintendent, Light and Water Department. It was designed for 1½-mgd service by Weideman & Singleton, of Atlanta, Ga. During most of the year it is operated at 1-mgd rate.

T. R. K.—863.

Construction Volume Increases

SHOWING increasing construction volume for the fifth consecutive year, and giving major credit for the 1938 increase to public construction expenditures, principally those stimulated by PWA loans and grants, the F. W. Dodge Corporation submitted last month to Administrator Harold L. Ickes, of the Public Works Administration, a special survey of the 37 states east of the Rocky Mountains in which the Dodge Corporation has an established independent reporting system.

The full summary of the Dodge report presented by Thomas S. Holden, Vice-President in charge of statistics and research for the Dodge Corporation, follows:

"The year 1938 was the fifth consecutive year of increased construction volume. The extent of the five-year recovery progress is indicated by the 1938 construction total of $3,196,928,000 for the 37 eastern states, compared with the $1,255,708,000 in 1933, the lowest depression year, an increase of 154 per cent. Last year's increase over 1937 amounted to 10 per cent.

"Major credit for the 1938 increase is due to public construction expenditures, principally those stimulated by PWA loans and grants. While advance indications of increased private residential work appeared as early as the last week in February, 1938, and private small-house building began to run ahead of the preceding year in May, it was not until September that the total of all privately financed building and engineering contracts began to run ahead of the corresponding period of 1937. Although this favorable upward trend of privately financed work continued to the end of last year and into the new year, it was not sufficiently large to overcome the slowness of the early months, and private construction contracts finished last year 15 per cent behind the preceding year.

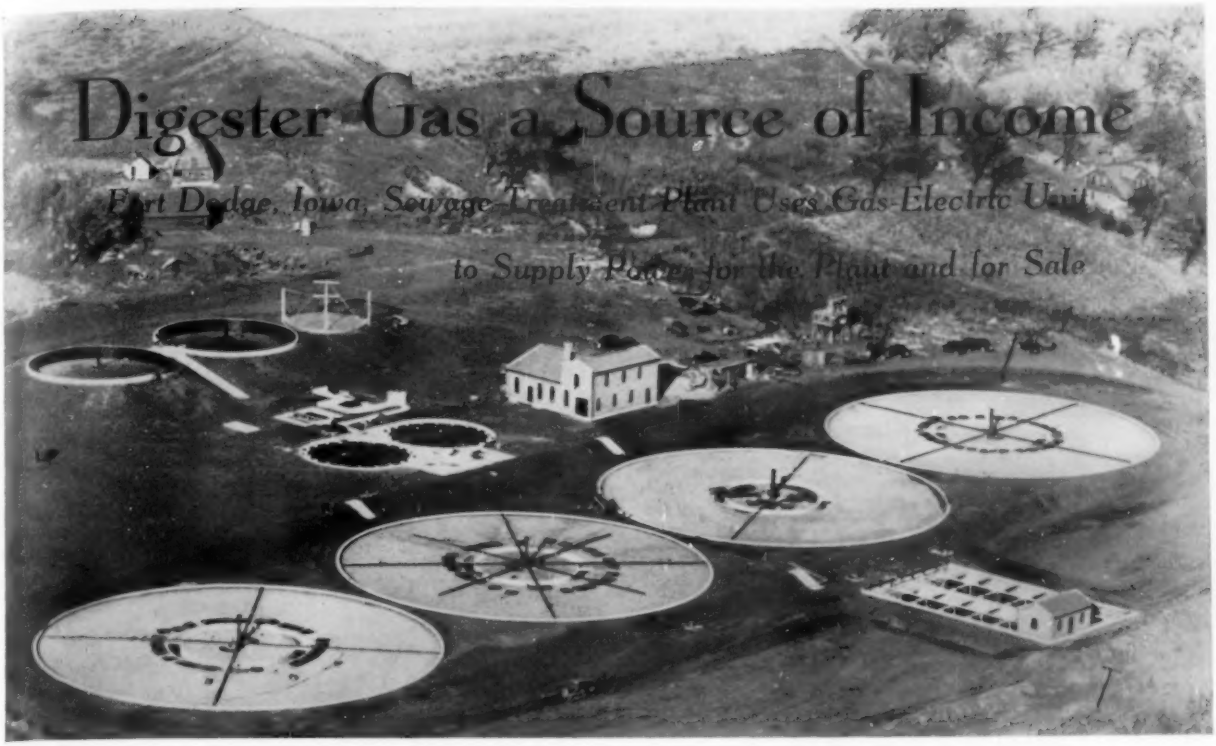
"Nearly two-thirds of the 1938 public construction contracts were let during the second half of the year, after the new emergency public works program authorized by Congress got into action. At the end of June, the dollar value of public construction contracts that had been let from the first of the year was 11 per cent ahead of the preceding year, and by December the total year's volume was 48 per cent ahead of the 1937 period.

"Public construction contracts naturally rose to a peak in December, owing to the requirement that PWA-financed projects be started before the end of the year. However, many projects were started in December after the letting of actual contracts on only fractional beginnings of the planned work. In such cases, the Dodge organization held the contracts out of its statistical record until such time as its field staff may verify actual lettings on the major portion of all of the construction to be undertaken. The purpose of this procedure was to maintain, as far as possible, the normal lag between contract figures and material purchases. This explains why the Dodge figures on public construction have run somewhat lower than other published figures.

"Publicly financed construction accounted for 53 per cent of the 1938 contract total. It represented 92 per cent of the dollar total of heavy engineering contracts; 53 per cent of non-residential building contracts; and 9 per cent of residential building contracts. During the past five recovery years, construction expenditures have been divided practically on a 50-50 basis as between public and private work."

Digester Gas a Source of Income

Fort Dodge, Iowa, Sewage-Treatment Plant Uses Gas-Electric Unit to Supply Power for the Plant and for Sale



ON January 11, 1937, the city of Fort Dodge began the construction of its new sewage-treatment plant, built to the plans and specifications of Buell & Winter Engineering Co., of Sioux City, Iowa. The plant was completed and officially put into operation January 6, 1938, just five days short of one year after construction began. Modern in every detail, this new sewage works offers many interesting features and details in its construction, and very satisfactory early operation.

The treatment plant cost $425,000 to build and equip. Of this sum, $190,000 was received as a grant from the PWA, and the remainder was realized from the sale of sewage-treatment plant bonds which are to be retired over a period of twenty years by means of revenue secured through sewer-rental fees received from sewage contributors.

Design

The plant is designed to handle an ultimate flow of 4,000,000 gallons of raw sewage per day. The present flow to the plant is approximately 2,000,000 gallons daily. This sewage is contributed by a population of about 24,000 persons and includes packing-house wastes from a hog-killing and processing works. The biochemical oxygen demand of this daily flow runs from 500 to 700 ppm.

Treatment

The primary treatment of the raw sewage consists of reduction of the sewage solids by a Chicago comminutor ahead of the Fairbanks-Morse vertical trash pumps located in a pumping station 2,000 feet from the treatment plant. The pumps deliver the sewage through a 16-inch cast iron force main against a 36-foot static head. The combined capacity of the pumps is 4,000,000 gallons daily. A Dorrco detritor at the plant removes the sand and grit from the sewage and in an aeration tank the grease is removed by air furnished by a Roots-Connersville blower.

The primary clarifiers are equipped with a Type SU sludge-collecting mechanism made by The Dorr Company. The sludge removed in the primary treatment is pumped to two 50,000-cubic-foot sludge digestion tanks equipped with Downes floating covers. The hot-water for the coils in the digesters supplying the heat for optimum action of the bacteria is pumped through the coils by two Gould pumps. Although the digesters are ordinarily heated by the cooling water from the gas engine, as mentioned below, there is also an auxiliary Ideal gas boiler for heating this water. A similar boiler of the same type in the administration building heats the building during the winter and furnishes hot water throughout the year. Both boilers were furnished by the American Gas Products Corporation, and all the gas lines are equipped with PFT flame traps. The gas delivered from the digesters to the engine, the boilers and the waste burner is measured by Emco sewage-gas meters.

The gas collected from the covered digesters is piped from the tanks to a 16,000-cubic-foot telescope-type gas holder erected by the Pittsburgh-Des Moines Steel Co. From the gas holder, the gas is delivered for utilization at the plant as needed.

There are two Marlow Duplex plunger pumps for the primary sludge, and one Fairbanks-Morse vertical trash pump for the sludge from the intermediate and final clarifiers.

Secondary Treatment

Secondary treatment at the Fort Dodge plant consists of four trickling rock filters in two stages, three of these distributors of the conventional four-arm design, and the fourth a special distributor built to the design of the engineers. It has eight arms and is so constructed as to per-

mit its operation either as a high-rate filter or at the more common filter loadings. This distributor is installed on one of the first-stage filters and is used primarily as a roughing filter. While results obtained to date from the operation of this filter are quite satisfactory, it is not being operated at high rates long enough to permit definite conclusions as to its efficiency.

The effluent from the trickling filters goes to the secondary clarifiers, which are equipped with Jeffrey rectangular sludge-collecting mechanisms. The secondary sludge is removed continuously by Fairbanks-Morse pumps and delivered to the primary clarifiers for settlement and delivery to the separate sludge digestion tanks. From early in its operation the Fort Dodge plant has consistently turned out a final effluent with a 90 to 95 per cent reduction in biochemical oxygen demand and settleable solids and is operating quite satisfactorily. Reduction of suspended solids averages about 75 per cent.

Dewatering the Sludge

The digested sludge from the separate sludge digesters is dewatered on an Oliver vacuum filter following chemical conditioning with lime and ferric chloride. The dewatered and conditioned sludge is then disposed of for use as fertilizer.

Use of Sludge Gas

All the recovered digester gas is put to work at the plant, a large part of the total being employed in generating electric power through a gas engine generating unit. Some of the gas is used for heating the administration building, while another part is employed in rendering the grease removed from the sewage by aeration.

Theodore R. Lovell, Chief Engineer of the plant, reports that almost from the very start of normal operation, gas production at the plant has been unusually high owing to the very large volume of packing-house wastes present in the influent. Operating figures for the plant show that the seasonal volume of gas recovered has been steadily increasing and that it is of a consistently good quality with a Btu value of about 700. In the late fall of 1938 gas production averaged around 102,500 cubic feet per day, although at times it has been greatly in excess of that figure.

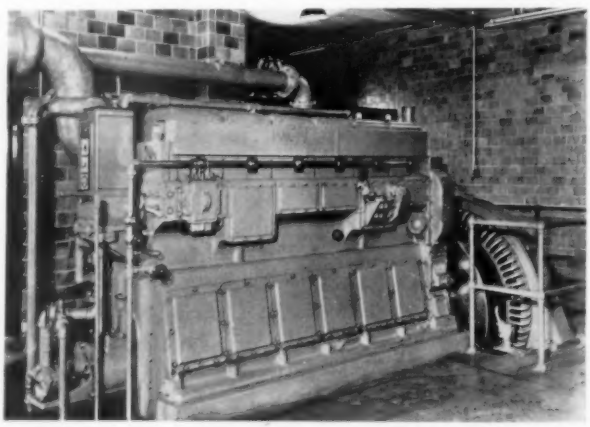
The plant uses about 41,000 cubic feet of the gas for its own services, as described. The remaining 61,500 feet is sold in the form of electrical power at a price of 0.85 cents per kilowatt-hour.

The Gas-Electric Unit

The gas engine used at the Fort Dodge plant is a Cooper-Bessemer Type GN, 6-cylinder vertical unit rated at 250 hp at 327 rpm. It is direct-connected to a 219-kva General Electric generator having a 7½-kw exciter. The engine is equipped with a remote-motor-controlled governor, which synchronizes the engine for parallel operation in order that the excess electrical output, which is sold, will be in step with the local power company's frequency. Alnor pyrometer and thermocouples are used; the engine has a closed cooling system; and is equipped with a Maxim DO-4 exhaust muffler.

In November, 1938, the engine operated 715 hours, or an average of 23.8 hours per day, and the latest figures show it running at full load 24 hours each day generating 4,200 kilowatt-hours. Of these power units, 1,200 to 1,300 are used by the plant, while the remaining 2,900 to 3,000 go into the local power company's lines.

The full efficiency of the sludge-gas power unit has not been realized until lately, because of overheating of the digesters during the early months of the plant's operation. Explanation of this difficulty lies in the fact that heat from the gas engine's jacket-water is utilized to heat the sludge-digestion tanks by circulating the jacket water through the heating coils in the digesters. Even though the circulating jacket-water was of normal temperature for efficient engine operation, the fear of caking of the sludge upon the digestion-tank coils due to overheating made it necessary to operate the engine at reduced loads until the problem of overheating was solved by installing auxiliary cooling coils in one of the primary settling tanks. This auxiliary cooling has proved wholly successful in dissipating the excess heat and, in turn, affords excellent control of the temperature of the contents of the sludge-digestion tanks. Since the auxiliary cooling coils have been installed, no further annoyance in this respect has been experienced, and the engine is entirely free to run at full load whenever necessary or desired.



THE GAS-ELECTRIC UNIT AT THE FORT DODGE SEWAGE WORKS

Tests and experience at the Fort Dodge treatment plant have shown that the best digestion and highest gas production for this plant can be achieved by maintaining a temperature range from 100 to 110 degrees F. in the digestion tanks.

Personnel

Theodore R. Lovell, Chief Engineer at the Fort Dodge, Iowa, sewage-treatment plant, was Resident Engineer for Buell & Winter Engineering Co., the consulting engineers who designed the plant. The general contractors were Lippert Bros., of Boone, Iowa, and the engine and generating unit, together with auxiliary equipment, was installed by the Interstate Machinery & Supply Co., of Omaha, Nebr. The switchboard and electrical work was supplied by the Electrical Engineering & Construction Co., Des Moines, Iowa.

When quoting from The American City, please give credit.

Sweepers and Flushers Team to Clean the Streets of Charlotte

Engineering and Sanitary Departments Divide Responsibility for Clean Streets and Alleys

THE responsibility for cleaning the streets of Charlotte, N. C., with the pick-up sweepers and flushers used, belongs to the Engineering Department, but the hand cleaning of the gutters of the congested business district during the day and the cleaning of the alleys is the duty of the Garbage Collection Department under the Motor Transport Division. This divided responsibility would seem to militate against complete coverage, but the streets of Charlotte tell their own story of united attention to the duties of cleaner streets by both departments.

There are 140 miles of paved streets in Charlotte, all of which are cleaned at least once a week with the motor equipment. The business district has an area about one-half mile square and contains about six miles of streets. These are cleaned every night after 12:00 with the pick-up sweeper and then the flusher. The system of using the sweeper followed by the flusher is used throughout the machine-cleaning of streets in this city. The reasons given are that the sweeper picks up material that should not go into the sewers anyway, such as large papers, boxes, and twigs and sticks, and thus the flusher has an even greater effectiveness in removing the fine materials which are the real nuisance to the pedestrian and which make dust when dry.

Police regulations forbid all-night parking, and the rule is quite well enforced except around hotels, where parking on the side streets is permitted. Stores are supposed to sweep the sidewalks in front of their places of business and deposit the trash and dirt in cans for collection by the Garbage Department, but they usually sweep directly into the gutters, creating a larger load for the machines.

The machines leave the Municipal Garage about 10:00 at night and are usually finished with the business area by 4:00 to 5:00 in the morning, when their 8-hour shift is ended. The day crew starts out at 8:00 A.M. and works through to 4:30 P.M. The night crew also covers other main arteries and some residence streets in its shift, making the rounds about twice a week. So far as possible, the night work is confined to main arteries and state highways where the slight amount of noise attendant upon the work of the machines will cause little or no disturbance. There have been very few complaints about noise, and by the shifting of the places where the pick-up sweeper dumped and the truck crew removed the sweepings the troubles have been removed. The chief trouble seemed to be loud talking which was much more disturbing to sleepy residents than the actual operation of the machines.

The cleaning unit under the direction of the Engineering Department consists of two South Bend flushers and two Elgin pick-up sweepers. The personnel, with one unit of a sweeper and flusher, comprises one sweeper operator, two men on the flusher, and two men on the pick-up truck to gather the sweeper dumpings during the night, and three in the day.

During the day six men hand-sweep the gutters in the business district and pick up papers in the alleys under the direction of the Motor Transport Division, Garbage Department. This division of the work is made because the garbage trucks pick up the refuse gathered by these men.

Costs

Costs of operation of the sweeper and flusher equipment for the first six months of the fiscal year, that is, the last

WASHING A STREET IN CHARLOTTE, N. C., WITH A POWER FLUSHER FOLLOWING A PICK-UP SWEEPER

six months of 1937, are as follows: during this period the flusher in operation ran 5,871 miles at a cost of 33.4 cents per mile for the length of streets cleaned, which was not the actual mileage of the flusher as recorded on the odometer. The cost was 39.2 cents per mile cleaned in the fiscal year 1936-37. This flusher was purchased second-hand in 1935 and is a 1932 model.

For the same six months of operation the sweeper traveled 3,586 miles, and the cost of operation was 58.1 cents per mile of street cleaned, assuming that the sweeper ran 95 per cent of the time or distance in actual cleaning. For 1936-37 the cost was 47.8 cents per mile of street cleaned. It must also be noted that the sweeper runs twice on every street, so that the cost is per curb-mile rather than per mile of street.

In Charlotte the flusher is used on a great many streets where it is impossible for the sweeper to operate during the day because of parked cars. During our inspection of the work in Charlotte, the foreman of one of the groups came to the City Engineer and stated that he had received complaints that a certain street had not been cleaned by the sweeper in weeks. A photograph of this city block would convince anyone that no sweeper could possibly operate in that street during the day with the automobiles packed in like that. Plans were made on the spot for a slight rearrangement of the routes so that the block in question would be included in an extension of the route of the night sweeper.

Lloyd McC. Ross is City Engineer of Charlotte, in charge of the motorized cleaning of the streets. The equipment is in charge of O. C. Fogus, Superintendent, Motor Transport Division.

T. R. K.—870.

Construction and Illumination at the Savannah Airport

Hunter Field Has 290 Acres of 900-Acre Tract Developed

THE NEW ADMINISTRATION BUILDING WAS BUILT OF GRANITE PAVING BLOCKS REMOVED WHEN OTHER PAVEMENTS REPLACED THEM

Nothing is permitted to be wasted by the City Engineering Department in Savannah

A LARGE WPA program of improvement in Hunter Field, the municipal airport of Savannah, Ga., has been under way for the past two years. With an eye to getting the most for the least expenditure of city and Federal funds, a number of valuable economies have been effected. The new modernistic Administration Building, designed in the City Engineer's office, is built of granite paving blocks, and the concrete floors consist of old discarded concrete from streets and structures broken up by hand to furnish the proper size of aggregate.

The Airport in Outline

Hunter Field was built seven years ago as an all-way field, but proved to be soggy in spots, so the present drainage system was installed. This consists of a concrete pipe line to which the drains along the sides of the runway are connected. Parallel lines of drainage tile are located 150 feet on either side of the center line of the runways, with catch-basins installed every 200 feet. Of the 900 acres in the field, 290 acres have been developed for landing. There are two main runways, both 125 feet wide, and one 3,000 and the other 3,500 feet long. The runways are of tar macadam with an asphalt surface treatment. There are two projected runways 3,600 and 4,500 feet in length. Care is being taken to clear the land beyond the end of each runway in accordance with the request of the Bureau of Air Commerce, since the most dangerous moment in any flight is that immediately after the take-off, when a faltering motor makes it necessary for a plane to land immediately beyond the end of the runway.

The runways have six pairs of floodlights, with one pair at each end of each runway which are controlled from the Administration Building, permitting lighting of any strip of runway from behind the plane as it lands. These floodlights are Westinghouse CG 25 floodlights of 3,000 watts each. The range lights are of the mushroom variety, set

close to the runway, with three at the end of each runway, giving a green light and aiding a landing plane to best select the runway on which it is to land.

The airport has a galvanized iron hangar with a 22½-foot clearance for the door, and the building measures 120 feet square, with two 30-foot wings, all built with a concrete floor and a concrete foundation.

The new Administration Building mentioned in the opening paragraph has a lobby 36 feet wide with two lavatories and rest rooms and with steel sash for all windows. Two suites of three offices are provided on the ground floor, and one suite is to be occupied by Eastern Air Lines. Space over the lobby is provided for the office of the Airport Manager and also for the U. S. Bureau of Air Commerce. A 10-foot walk in front connects with the hangars and automobile parking area, as well as with the loading stretch to which arriving planes taxi. A taxi strip of bituminous macadam 450 feet long and 300 feet wide has been built at the end of the field in front of the Administration Building.

In a small basement in the Administration Building is an automatic oil heater, making it unnecessary to have janitor service at the building at all times.

The airport improvements, costing the city a total of $75,000 in two years, have been made possible through the use of WPA labor. Plans, designs and construction have been in charge of A. S. Goebel, City Engineer. T. R. K.—883.

A FLOODLIGHT INSTALLATION ON ONE OF THE RUNWAYS OF THE SAVANNAH MUNICIPAL AIRPORT

Local Chambers of Commerce Aid Urban Rehabilitation

EXCERPTS from Report of the Scope Committee of the Construction Industry Conference, published February, 1939, by the Construction and Civic Development Department Committee of the Chamber of Commerce of the United States:*

"Local chambers of commerce are providing a useful service to the construction industry by the active interest they are taking in modernizing building codes, by making more effective and practical local zoning ordinances and city planning activities, by assisting the industry with apprenticeship training programs, and by aiding it in obtaining local information on supply and demand for various types of structures. . . .

"Long-range planning of public improvement programs by state, regional, city and town planning boards is strongly urged. Your committee recognizes the need for a permanent system of financing to replace recurring emergency programs and to develop continuous activity and a more regular rate of progress, and have a stabilizing effect upon the industry as a whole.

"Your committee recommends serious consideration of the rehabilitation of blighted urban areas by private public-utility housing corporations, or some similar type of special franchise corporation with regulated powers to assemble properties and manage and develop them in accordance with recognized construction industry standards and practices, and in cooperation with municipal planning agencies.

"Modernization of existing structures continues to be an urgent need and an important market for the building industry. Educational campaigns to promote modernization of single residential, commercial and factory structures and to promote neighborhood face-lifting should be prosecuted vigorously by local organizations and actively encouraged by national organizations and the press.

"Your committee advocates such measures of tax revision as will encourage long-term investments in construction and real estate. . . . .

"All the branches of the construction industry, including labor, are united in the opinion that acceleration of building is the responsibility of private interests. Conferences should be held to exchange views as to the possibility of working out some practicable methods of eliminating avoidable additions to cost whether caused by stoppages of work, in case of jurisdictional disputes; by skyrocketing of material prices or labor rates due to shortages of materials or skilled mechanics; or by other causes."

* The personnel of this committee comprises J. J. Matson, Chairman, V. P. Ahearn, C. I. Cheyney, Russell G. Creviston, E. J. Harding, Thomas S. Holden, Walter R. McCornack, John McC. Mowbray, Ernest T. Trigg, George W. West, Douglas Whitlock, and John H. Zink.

A. B. Greensfelder is Chairman, and F. Stuart Fitzpatrick, Secretary, of the Construction and Civic Development Department of the Chamber of Commerce of the United States, Washington, D. C., from which address copies of the complete report may be secured.

Another $800,000,000 for Housing Loans by USHA Proposed

UNDER a bill (S. 591) introduced in the United States Senate on January 12 by Senator Wagner, the slum clearance and low-rent housing program initiated under the Wagner Housing Act of 1937 would be given additional funds to enable the U. S. Housing Authority to continue its program at least two years longer. The amount of securities which the Authority might have outstanding, now limited to $800,000,000, would be increased by that amount, while the agreements into which the Authority might enter to make annual contributions to low-rent housing projects financed by public agencies, now limited to $28,000,000 per year, would be increased by $45,000,000.

Expansion of the USHA program as proposed in this bill will mean full-time jobs for one-third of all the unemployed workers in the building industry, a report received on February 2 by Administrator Nathan Straus from the American Federation of Labor states. The report, signed by Joseph McInerney and Herbert Rivers, President and Secretary, respectively, of the A. F. of L. Building and Construction Trades Department, highly commended the progress made by the USHA during its first year of operation and urged immediate enactment of pending amendments to "guarantee the extension and continuity of the program."

"It is estimated that under the program authorized by Congress to date, a total of 270,000,000 man-hours of work will be created at the site and more than $275,000,000 will be paid in wages to laborers at the sites of construction," the report pointed out. The proposed amendments will double these benefits and provide the equivalent of two full years' work to 330,000 building workers. This outlook is especially significant in view of the estimate that at the close of 1938 there were nearly 1,000,000 building workers totally unemployed.

Street Sign-Posts Made by City Highway Department

By E. R. HAMMATT
Maintenance Engineer, Engineering Department, Jacksonville, Fla.

SIGHTLY STREET MARKERS ARE SET WHERE THEY CAN BE SEEN, IN JACKSONVILLE, FLA.

THE city of Jacksonville, Fla., has some 3,000 street markers of the concrete type, with the street names on four sides and the block numbers on two sides at the top of the post and just above the street name. These posts are constructed and painted at the City Highway Department Property Yard. They are 74 inches in length, 7¾ inches square, and weigh 300 pounds each. They are usually set 32 inches in the ground, leaving 42 inches above for lettering. The lettering of the street name is perpendicular, and the block number is horizontal.

A 4-inch base is used with this post to keep it from tilting. The base is 19½ inches square at the bottom, tapering up to 13½ inches at the top, and it has an 8-inch opening which allows it to be set down over the post as a collar, to the ground. The weight of the base is approximately 62 pounds.

The post and base are made with a 1:3 cement-sand wet mix. A 2½- to 3-inch boiler tube 63 inches in length is placed in the center of the post, and a piece of reinforcing iron in the base. The boiler tube in the post serves as reinforcement and saves on cement. Ten posts can be made with 6 sacks of cement and ¾-cubic yard of sand. Nine sacks of cement and 1 cubic yard of sand will make 53 bases.

The face of the post is painted white, with a black cap or top and a black stripe on the four corners. The lettering is also black. The base, next to the post, is painted black, and the taper and sides white.

Twenty-five posts and bases can be given a two-coat prime with one gallon of cement primer. Forty posts and bases require one gallon of white enamel for a one-coat finish. Thirty posts and bases can be lettered, striped and painted with one quart of compound of ivory drop black and black enamel.

These posts were designed and constructed by the late Floyd Palmer, Highway Maintenance Engineer, under the supervision and direction of the City Engineer, W. E. Sheddan, in 1930. Only a very few of the posts were placed at the time, for the inspection of the public. From 1930 to 1933 some 300 were placed, and in 1934 and 1935 they were accepted as the standard street marker for Jacksonville, and Thomas C. Imeson, Commissioner of Highways, succeeded in getting an appropriation placed in the budget for the making of these markers.

The maintenance and upkeep cost is very small. A crew of only five to seven men is required to construct, erect and maintain them.

U. S. Junior Chamber Puts the Case for City Planning

IF any city in the world were to be completely destroyed and rebuilt according to a comprehensive, correlated plan, there is little doubt that it would be vastly better. It is not feasible, economically, to rebuild our cities all at once; but nevertheless a comprehensive plan can be worked out on the basis of careful study, and all new building and rebuilding can be required to conform with this plan. Thus in the course of time the city will be built in general conformity with the plan. Obviously, the effects of such planning are not felt immediately; but the benefits accrue to the rising generation. A city planning program is a forward-looking, constructive program, and as such should particularly appeal to any Junior Chamber of Commerce. It is a natural and ideal project for an organization of young, active, civic-minded men, who can accomplish much in helping to improve their home cities.

City planning has to do with the development of a municipality according to comprehensive and intelligent, coordinated thinking. It has to do with the proper location, design, and even the financing of public lands and construction; and the regulation, by zoning and otherwise, of private lands and construction. Good city planning should eliminate the blighted area and the slum—which are as much the result of poor planning as of economic forces. Good planning should secure maximum use and benefit to the citizens of all public facilities, such as parks, streets, avenues, and boulevards, airports; police and fire stations; reservoirs and water systems; sewers; traffic control; docks, wharfs and quays; railroads; bus, trolley, elevated and subway lines; court-houses and other public buildings; lighting systems and power plants. Good planning should stabilize and preserve real estate values by control of residential, business, and industrial districts to prevent location and contamination, and to preserve health, efficiency, order, and scenic values. Good planning should save the taxpayers money, and give them more for what is spent. Good planning is good sense.

EDITORIAL NOTE.—This challenging statement of the case for the gradual rebuilding of American cities under well-considered comprehensive plans is the Foreword of a Manual for the City Planning Committees of local Junior Chambers of Commerce, prepared by the City Planning and Beautification Committee of the United States Junior Chamber of Commerce. The Committee will be glad to have any suggestions for the preparation and carrying-out of its program, and will welcome the cooperation and guidance of local officials and others interested in its purposes. The mimeographed Manual is available on application to the Secretary of the United States Junior Chamber of Commerce, Mayfair Hotel, St. Louis, Mo.

Cooling New York's Hot Spots

Is Much Like the Job Anywhere Else—and 75 Per Cent of the Alarms Are Sent in from Boxes

OF New York City's 28,000 fires a year, 65 per cent of them cause less than $10 damage each. In fact, 95 per cent of them cause less than $1,000 damage each. Only 10 fires out of more than 30,000 extend beyond the building in which they originate.

A great city is expected to do all things in a big way. What actually happens is that the little things which occur in every municipality multiply into a vast number of little things in the large municipality. New York City's many little fires and few severe fires show an average loss of less than $300, but a total fire loss of seven or eight million.* Against this, or added to it, is a fire department budget of 35 million dollars. But without this costly, efficient force, what might not the fire loss be? Commissioner John J. McElligott is convinced that New York's fire loss is held down to only $1.05 per capita through the adequate trained personnel which he commands, and a liberal equipment-replacement policy. "We are building for the future," he says.

This up-building has embraced strong fire-prevention measures, personnel training and the selection and purchase of modern apparatus. It is a modernization program which involves the revision of principles as well as physical improvements.

Important prevention activities are conducted by the Division of Fire Prevention, the Division of Combustibles, and the Division of Licensed Places of Public Assembly. Fire Prevention makes about 500,000 annual inspections and issues about 20,000 written orders. Combustibles makes about 675,000 annual inspections and issues about 18,000 written orders. Permit fees for the year 1938 were $1,187,907.13. It is interesting to note that 73 per cent of the written orders are complied with promptly. The availability of these figures indicates careful reinspection.

The Division of Licensed Places of Public Assembly makes not only 26,000 regular inspections, but in addition

* The fire loss for 1937 was $5,978,267, and the per capita loss $0.804. The 1938 fire loss was $7,878,335; the per capita loss, $1.06. In 1936 there were 28,453 fires; in 1937 there were 28,415 fires; in 1938 there were 26,819 fires.

THIS FIVE-ALARM FIRE ON JANUARY 19, 1939, DESTROYED THE OLD ST. MARTIN'S EPISCOPAL CHAPEL AND NEGRO COMMUNITY HOUSE AT LENOX AVENUE AND 122ND STREET, NEW YORK

It called out every piece of apparatus in Harlem and caused every piece in Manhattan to move up to cover

Courtesy of Westinghouse Electric & Mfg. Co.

NEW YORK'S NEW DIESEL-ELECTRIC "FIREFIGHTER"

some 1,500 original inspections. One of the highly important hazards covered is draperies and decorations. Of the seven to eight thousand orders issued, 92 per cent are obeyed with reasonable promptness.

The office of the Fire Marshal arrests 60 to 70 persons annually, and convicts about half for arson, and a fourth for juvenile delinquency and malicious mischief.

Close cooperation is of course accorded by the Police Department. Radio patrol cars respond to all alarms, and thus aid in apprehending false-alarm offenders—of whom there are plenty. Of the 40,000 annual alarms, 29 per cent are false. The city magistrates are cooperative in discouraging this troublesome practice.

The Bureau of Fire Alarm Telegraph is continuing a long-term plan of replacing overhead wires with underground cables to reduce interruptions to the system from storms. In the five boroughs there are 1,214 miles of underground cables comprising 19,262 miles of circuit conductors, and 45 miles of aerial cables carrying 1,062 miles of circuit conductors, compared with 1,757 miles of open overhead wires. The five boroughs have about 11,000 fire-alarm boxes (street and school) or one box for every 650 residents. About 75 per cent of all alarms are sent in from boxes.

Four of the five boroughs are protected by modern fire-alarm central offices, which were designed by Department engineers, and plans are now being completed for a modern central office to be erected in the remaining borough. During the last two years, the Marine Division's ten fire-boats have been connected into the alarm system by means of a two-way radio system, including 12 deputy chiefs' cars equipped with medium-high-frequency receivers, and one maintenance car equipped for two-way communication.

Until four years ago the departmental regulations were an accumulation of requirements that had grown up through a number of administrations, until some were contradictory and others were impossible to observe. These have been thoroughly rewritten as of March 1, 1937, and are now the code of the Department.

On November 3, 1936, the people returned a referendum in favor of the three-platoon system, which in three years adds 4,500 men to the Department. The necessity of assimilating these heavy raw reinforcements caused special stress to be placed on training. The central plan has been to assemble all training effort in one place, the Fire College in Long Island City, Queens Borough. The object is to make a homogeneous force of trained firemen, the final refining process being post-graduate work in fire-fighting. One of the schools is for chauffeurs of apparatus, at which the operation of the engine as well as of the vehicle is taught, so that expensive pieces of apparatus may be in the hands of men who appreciate their responsibilities. This is one service which a small city cannot provide with like thoroughness; but New York City trains many firemen from other places and has also schooled the state's prison officials in fire conduct.

Equipment Modernization a Big Task

There are 222 engine companies, 125 hook-and-ladder companies, 4 rescue companies, and 10 fire-boats. What is not generally known is that New York City still has, on Staten Island, two volunteer hose companies numbering 21 officers and 247 men.

The following pieces of apparatus have been added to the Department since January, 1934:

NUMBER	TYPE	COST
99	Pumping engines	$1,230,835
48	Hook and ladder trucks	692,880
22	Hose wagons	156,913
2	Tractors	10,600
13	Hydrant service apparatus	20,166
2	Searchlights	15,084
91	Automobiles	88,112
17	Delivery trucks	15,940
1	Rescue wagon	12,000

The newer pumping engine emphasizes safety, and embodies a cab for driver and officer, a rear shatterproof windshield to protect the men, the subway type of strap, and scaling ladders stored at the side of the apparatus. Semaphores signal turning movements.

About 130,000 feet of hose is added each year to maintain in good condition the million feet in service, as follows: 1½-inch, 164,000 feet; 2½-inch, 718,000 feet; 3-inch, 130,000 feet; 3½-inch, 33,000 feet.

All hose is of the N. Y. F. D. Specifications type.

The Hanover Sewer System and Sewage-Treatment Plant

By C. A. ECKBERT, C. E.
Borough Manager, Hanover Borough, Pa.

A SUIT brought in the Court of Common Pleas of York County, Pa., against numerous individuals who were alleged to pollute the north-and-south branch of Forney Run early in 1901 caused the construction of the first sewers in Hanover Borough. Seven citizens formed an association and obtained a franchise to construct and operate a sewerage system. The sewer system was started in July, 1902, by the Hanover Sewer Co., Inc., but the work took in only certain portions of the town where a gravity system could be used. The State Depa~tment of Health in 1903 required that a sewage-treatment plant be built. This consisted of a septic tank and two contact filter beds, with no provisions for treating the effluent. However, soon after the plant was placed in operation, the company was required to treat the effluent with hypochlorite of lime. On April 26, 1912, the Hanover Borough Council purchased the property of the Hanover Sewer Co. and it became a municipal institution.

Early in 1926 the late Nicholas S. Hill, Jr., consulting engineer, of New York City, reported on methods of improving the facilities of sewage collection and disposal, and later, Fuller & McClintock drew up plans and specifications for an outfall sewer and an adequate sewage-treatment plant. A 21-inch vitrified pipe sewer laid at an average depth of 7 feet, and for a distance of 5,890 feet with a drop of 7 feet in that distance, was laid from the old Hanover sewage-disposal plant site to the location of the new treatment plant, which was completed April 2, 1929. Even before that was completed, the firm of Albright & Mebus, consulting engineers, of Philadelphia, was employed to report on the needs for additional sewers and to prepare a comprehensive sewer plan. The need for this was due to the growth of Hanover Borough and its covering of four drainage areas which now require ejector systems in conjunction with the gravity system. The Elm Avenue ejector system was built in 1930, the Pleasant Street ejector station was built in 1931, the South Franklin Street station in 1932, and the Moul Avenue ejector station in 1933. The Pine Street ejector system was built in 1929, and the Hollywood ejector station was completed in 1937.

In all the ejector stations the sewage enters a closed pump suction well, so that no sewage is exposed to the air. The well is ventilated, so that no objectionable odors are released. These stations are equipped with non-clogging Yeomans 150-gpm pumps driven by 5-hp 3-phase motors. The pump wells are approximately 10 feet square and 10 feet deep, and all are operated with automatic electric control.

Photo by The Hoffman Studio

GENERAL VIEW OF THE PRIMARY AND SECONDARY SEWAGE-TREATMENT PLANT OF HANOVER BOROUGH, YORK COUNTY, PA.

Sewage-Treatment Plant

The sewage-treatment plant is located two miles west of Center Square, in Conewago Township, Adams County, Pa. It is built 5,390 feet southwest of the old sewage-disposal plant. Access to the site of the new plant is over a strip of land 20 feet wide and 1,630 feet long, on which a hard-surface roadway was built.

The sewage of Hanover reaches the plant through a 21-inch terra cotta pipe requiring approximately 2 hours and 35 minutes of flow time. It first passes through a chamber with a screen consisting of bars 1½ x ⅜-inch spaced 1⅞ inches center to center. Screenings are removed several times daily by hand, placed in a conveyance and buried on the property.

From the screen chamber the sewage flows to the Imhoff tanks and thence to a wet well, where Yeomans 1,100-gpm pumps lift the effluent to a siphon chamber which contains the control for the flow of the effluent to the circular sprinkling filters. The effluent from the sprinkling filters passes to a resettling basin and thence to the creek through a 15-inch pipe line. The average daily flow through the plant is 1,150,000 gallons.

Two Yeomans horizontal centrifugal non-clogging type sewage pumps having a capacity of 1,100-gpm at 19-foot head, and driven by 10-hp motors, are installed to lift the sewage from the primary to the secondary treatment. Other equipment includes two Westco single-stage double-suction 40-gpm pumps driven by 5-hp motors; one Burks self-priming 150-gpm centrifugal with a 5-hp motor; one self-priming Ingersoll-Rand 250-gpm centrifugal with a 10-hp motor; one Barnes plunger-type sludge pump of 150-gpm capacity with a 5-hp motor; one American centrifugal sludge pump with a capacity of 250 gpm and equipped with a 7.5-hp motor; one Hanover Engineering Co. motor-driven 40-gpm sump pump with a 1-hp motor; one Hobart Bros. Co. 20-cubic-foot twin air-cooled compressor with 2-hp motor; two Wallace & Tiernan type M.S.V. chlorinators; one 12 x 6-inch Builders Iron Foundry venturi meter; one Fairbanks portable platform scales; one W. J. Savage Co. dry chemical feeder; two Simplex dosing siphons and two Simplex rotary distributors.

Cost of Operation

There are a total of 3,407 sewer connections in the borough and 78 outside the borough, making a total of 3,485. The cost of electric current for the operation of the sewage-treatment plant and the six ejector stations one month is as follows:

Disposal plant	$103.00
Elm Avenue pump station	21.94
Factory Street pump station	19.09
Pine Street pump station	7.85
McKinley Avenue pump station	3.90
South Franklin Street pump station	3.40
Hollywood pump station	2.00
	$161.18

Since 1928 an extensive sewer construction program has been in progress. Seven miles of main-line sewer and one mile of outfall sewer have been built, making a total of twenty miles of main-line sewers in operation in the entire sanitary sewage system. There has been an increase of $13,422.14 in sewer rentals since 1928, the present yearly income being $30,225.84.

The primary sewage system constructed at the sewage-treatment plant in 1928 and 1929 cost approximately $64,400; the rights-of-way, $11,600; building the roadway, landscaping, additional equipment and buildings, $6,000; total, approximately $81,600. The secondary sewage system, built in 1933 and 1934, cost $71,224.04, of which $20,157.18 was received as a grant from the Public Works Administration.

When Picking Candidates for a City Council

NINE tests of the qualifications which candidates for membership on a City Council ought to possess are set forth in the following statement adopted January 5, 1939, by the Executive Committee of The City Manager League of Toledo, Ohio:

Whereas, The City Manager League of Toledo is a voluntary organization of citizens for the purpose of promoting and supporting honest and humane municipal government in Toledo under the City Manager Charter; and

Whereas, the quality and success of the city government is determined by the character and ability of the members of Council;

Now, therefore, be it resolved, that any candidate for Council, who may be endorsed and supported for election by The City Manager League, shall possess the following qualifications:

1. He shall be honest and honorable in all matters, private and public.

2. He shall be sincerely devoted to serving the best interests and welfare of the entire city and all the citizens, rather than some group or section.

3. He shall be an enthusiastic supporter of non-partisan and non-patronage council-manager government, in which the council determines policies and enacts legislation, and delegates the administration to the City Manager and his appointees, chosen only on basis of merit.

4. He shall be unqualifiedly committed to the principle of "Equal rights for all and special privileges for none."

5. He shall actively support the principles of civil service and its administration, to the end that favoritism of every kind may be eliminated and the selection, promotion and retention of city employees may be determined solely upon the basis of merit and ability.

6. He shall devote sufficient time to his duties as councilman to become acquainted with the affairs and business of the city government so that he may exercise an intelligent and independent judgment in the consideration of its problems and policies.

7. He shall cooperate in the formulation and execution of a long-range plan for public improvements and services, designed to provide the greatest possible benefits for all the citizens.

8. He shall at all times insist upon the strict enforcement of law, without favor or discrimination, to the end that crime and vice may be reduced to a minimum.

9. Finally, he shall possess sound judgment and ability; be independent in thought and action, yet open-minded and considerate; free from any selfish influence; have courage to fight for right and principle; and be willing to cooperate with others to serve all the people at all times.

Steam Power Produced at the Manchester Incinerator

New Hampshire City Unit Runs Asphalt Plants and Has Steam to Spare

THE MANCHESTER REFUSE INCINERATOR AND WASTE HEAT BOILER PLANT

WHEN the Manchester, N. H., refuse incinerator was designed as a steam-producing unit, it was known that there would be more than enough steam generated to operate the two adjacent municipal asphalt plants. Plans were made to waste the excess steam, but not without recording this available power, so that the city would know what power could be relied upon for other service if required. It has even been suggested that a laundry or cleaning establishment or other small industrial unit might locate adjacent to the City Yard, where the incinerator is located, and purchase some of the steam now wasted, providing an income to reduce the overhead on the disposal of the city's solid wastes.

Housed in a concrete-and-brick building lined with vitrified tile and 65 x 85 feet in plan, and well lighted with ample steel sash windows, the plant makes an exceptionally good appearance in the heart of a growing industrial district.

Delivery of Refuse

The garbage and rubbish of the city is collected by a city-owned fleet of 14 dump-trucks, each of which is weighed on the scales at the entrance to the City Yard, thus providing a complete record of the material delivered by city equipment. The material delivered by private trucks is not weighed and is not included in the amount of material burned.

The delivery floor is reached through four openings 13 feet wide by 14 feet high, equipped with steel rolling doors. These openings are sufficiently high to permit the trucks to back in easily and dump their loads. No accidents have occurred in the delivery of the refuse. The lights over the delivery floor are also sufficiently high to prevent breakage from the tops of the dump bodies during dumping. One man on the delivery floor helps with the tail-boards and cleans up the dumping floor continuously.

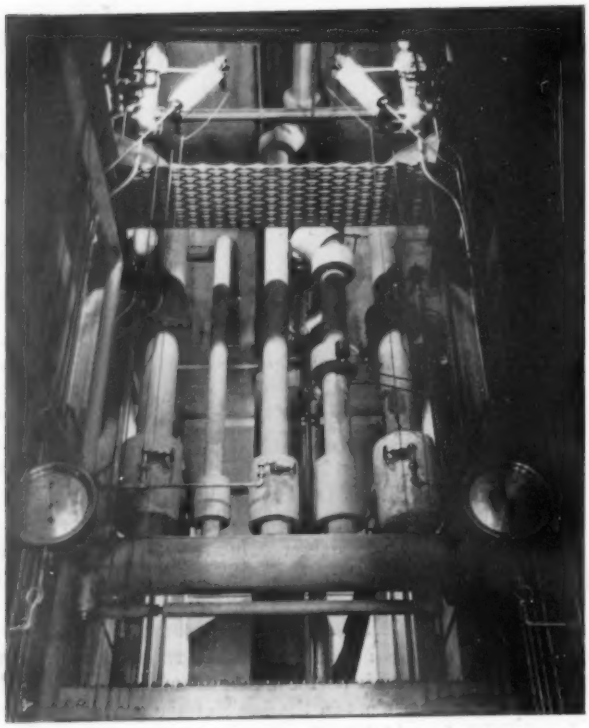
All rubbish, garbage, cans and bottles are dumped into the receiving pit, which is 65 feet long, 12 feet from front to back, and 14 feet deep below the dumping-floor line. It is lined on the bottom with steel rails 12 inches on centers, and the back of the pit is sheathed with $\frac{1}{8}$-inch steel plate. Two slots in the back of the pit, each 7 feet long and 1 foot high and covered with heavy screen, are the intake for the forced-draft fans. They also serve to ventilate the pit and remove all odors that might come from the immediate delivery of refuse.

Charging

The delivered material from the pit is raised by a $1\frac{1}{2}$-yard Haiss clamshell bucket operated by a 3-ton P&H wall crane. The charging floor is equipped with two sets of three sheet metal hoppers to receive the material brought up by the clamshell. The hoppers are not quite wide enough for the size of the bucket, which accounts for some spilling of material on the floor. This is not permitted to remain, but is cleaned up immediately by the two men who work 8-hour shifts on the charging floor.

Each of the hoppers serves a cell of the two separate furnace units. Each furnace has its own combustion chamber, then a flue leading to the common radial brick

ONE OF THE FOUR DOORWAYS AT THE DUMPING PIT
Note the ventilation louvres in the sheet-metal protected wall, and also the adequate curb at the edge of the pit and the wheel guard at the base of the column



A VIEW UPWARD IN THE BOILER AISLE AT THE MANCHESTER INCINERATOR

chimney. This Kellogg stack is 135 feet high, with a steel corset around the core. The inside diameter is 7 feet.

The plant is rated at 150 tons per 24 hours and reaches this amount regularly. The boilers are rated at 5,200 pounds of water evaporated per hour per boiler.

Stoking

Three men per shift work on the stoking floor, each man having charge of two cells. The charging gates, which permit the material from the hoppers on the charging floor to drop through into the furnace, are operated by compressed air. When a charge is to be dropped into the furnace, the stoker signals the charging floor, and the men watch that hopper and push any bulky material through the 30-inch square opening.

The grate area of each cell is 45 square feet, including space allowed for drying, and the walls are lined with 13½ inches of fire-brick. The combustion is controlled by air introduced beneath the grates. This air is preheated in the flue to a temperature of 500 degrees F. The temperature within the combustion chambers immediately behind each group of cells is maintained at 1500 degrees F. The induced-draft fans, made by Buffalo Forge Co., and the forced-draft fans, by the same company, are driven by Wing steam turbines and by General Electric motors, respectively.

The grates are cleaned at the end of each 8-hour shift. The front section, consisting of 6 square feet, is dropped by means of a counterweighted mechanism operated by hand lever. The clinker is quenched and dropped into waiting trucks in the ash tunnel below through horizontal gates operated by ratchet wrenches through a rack and pinion. Within the ash tunnel also is the cleanout door for each of the combustion chambers. The six ash dump hoppers in which the clinker is quenched are lined with fire-brick.

Analyses of the ash from the Manchester incinerator show an average of ½ of 1 per cent organic matter and never more than 1 per cent.

Steam Generating, Use and Waste

Each furnace is equipped with a special Bigelow waste heat boiler with 140 3¼-inch water tubes, a steam drum and a mud drum. The boiler feed is automatic by means of a Swartwout feed water regulator and Buffalo duplex feed pumps. A 5,000-gallon hot-water storage tank is maintained for the feed water. From this the water is taken through a Swartwout feed water heater and fed to the boilers at 215 degrees, although the storage temperature is lower. The steam-generating system is equipped with Atlas boiler blow-off valves and Anderson condensation traps on the steam lines. All steam piping and fittings are extra-heavy. The boilers have non-return stop valves for protection in starting up a new fire in one of the boilers while the other is operating at full load.

Inasmuch as not all the steam is used at present, a considerable portion of the steam at 150 pounds must be wasted. The automatic waste steam valve is set to "pop" at 150 pounds, and the steam is released above the building through a Maxim silencer to prevent noise in the neighborhood. About 60 per cent of this steam is wasted at present.

The control and register panel for the steam system is as complete as could be found in any commercial steam plant. Furnished by the Brown Instrument Co., it contains four steam flow-recording and flow-indicating meters as follows: one for each boiler; one for waste steam; and one for the steam delivered to the asphalt plant. There is also a recording steam pressure gage; two indicating pyrometers, one for the combustion chambers and one for the preheated air. A set of six Ellison draft gages for each unit of furnace and boiler is at the right-hand section of the instrument panel. There is a draft gage for each of the three cells in each furnace, one for the draft in each boiler, one for the boiler gas outlet, and one for the preheater gas outlet.

Between the two furnaces is a bank of five steam valves for the master control of the steam from the plant. From left to right, these valves, which are hand-operated, control the following lines: the first and fifth are from the two waste-heat boilers; the second is to the waste-steam valve; the third controls the flow to the asphalt plants; and the fourth controls the flow to the various house and auxiliary services, such as the steam heat for the building, the domestic hot-water heater, the boiler feed pumps, and the induced-draft fans.

Auxiliary Equipment

The auxiliary equipment in the Manchester incinerator is installed to insure smooth and uninterrupted operation. It includes an Anthony oil burner inserted in the end of No. 3 cell of No. 2 furnace, and another in the combustion chamber of No. 1 furnace at the top. These can be used when the plant is overloaded with wet refuse during long rainy spells such as during the two middle weeks of July, 1938, when it rained continuously. One is also employed to furnish heat for the boiler of No. 1 furnace when there is nothing to burn and steam is needed for the asphalt plants.

A pair of Wing turbines located between the boiler uptake and the breeching provide the induced draft, and a Swartwout feed water heater makes up the difference between the storage-water temperature and the 215 degrees at which the water is delivered to the boilers.

The plant does not generate its own electricity, but takes power from the local utility high-tension line and uses it at 208 volts. All electrical control is centered in a panel at the east end of the building with no fuses but with air gap switches.

The steam line from the incinerator to the asphalt plants is insulated within the incinerator building to prevent too much heating-up of the structure, but outside it is not covered. The steam line is 4-inch Van Stone steam pipe carried on wooden posts and is used only for five months a year, the paving season in Manchester. Condensation in the line is taken care of by the constant bleeding of the line at the steam-jacketed asphalt kettles.

Two Worthington 2-stage compressors with 10-hp Delco motors and V-belt drive furnish the air for the operation of the charging gates. The feed water pumps are Buffalo Pumps, Inc., units. A 2-hp General Electric motor with a built-in 6 to 1 gear ratio drives the Anthony fuel oil pump for the oil burners. The suction line is equipped with Anthony twin oil strainers.

Heating the Plant

Heat for the plant is provided by Wing unit heaters. One on the dumping floor is used only at night in winter when the doors are down, and heats the space around the pit and makes it unnecessary to shut off and drain water from the flushing lines used for cleaning the dumping platform and the pit. Another of the same type of heaters is installed on the charging floor. The unit heaters are on automatic control when the steam is used. They will not run automatic during the summer season when the steam is shut off, and must be turned to hand control. The office and wash-rooms are heated by small steam radiators.

Labor and Care of Employees

Considerable thought has been put into the care and comfort of the employees of the plant. They are working in a power plant rather than a plant for the disposal of undesirable waste products, and the psychological effect of this assumption on the part of the operating personnel is shown in the cleanliness of the plant and the pride taken in their work. Bubbler fountains are provided on the charging and stoking floors and in the toilet rooms.

There is a stairway at each end of the charging floor, and because of the excessive draft that is induced by the open pit below, both stairways have doors at the top. These were installed after the plant was completed, when the cold draft during winter operation was noted. One stairway has a conventional monitor hood and doorway; while the other, where there was not the same amount of room for a door, has a counterweighted cover which is easily lifted and replaced. A curb at the top of the stairway, not included in the original plans, permits flushing the charging floor with a hose without the water running down the stairs.

A locker room is provided for the men on the boiler room level. It is equipped with eighteen lockers, two toilets, two urinals, two showers and two wash-basins. Once a week each man is required to empty his locker and wash it out and disinfect it. At this time the entire room is washed, and the floor is washed daily. Hot water for the wash-rooms is provided by a Patterson-Kelley Co. house hot-water heater using waste steam.

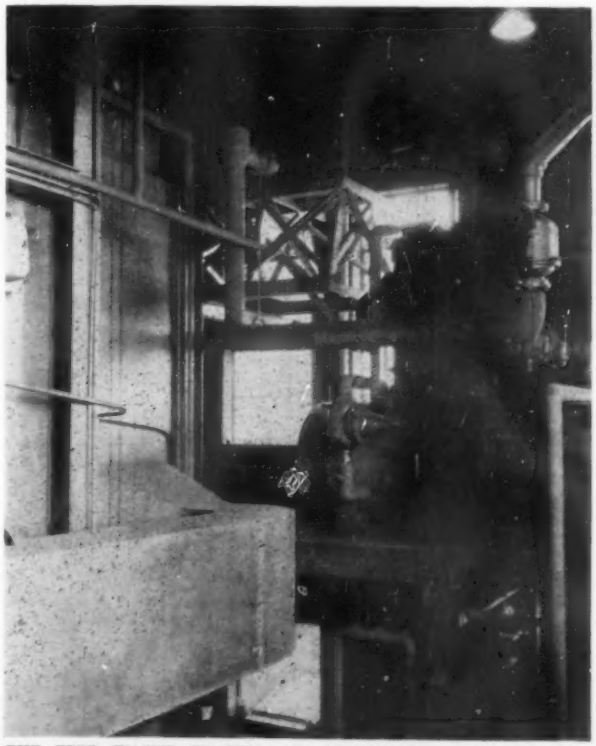
The Superintendent's office is located on the stoking-floor level and has a locker room with six metal lockers, washstand, slop-sink, toilet, urinal and shower. This room is used by the Superintendent and the watch engineers.

The plant is operated 24 hours, but only two men are on the 10 P.M. to 6 A.M. shift, when only one furnace is operated to keep up steam for the asphalt plant.

Cleanliness of the Plant

In addition to the references to the cleanliness of the plant already made in this article, particular mention should be made of the complete lack of any odors about the plant. The Superintendent prides himself on the wholesome atmosphere about the plant, which is maintained at a minimum cost. The cost of the disinfectants used for the sterilizing of the pit, one-half of which is thoroughly cleaned every day and sprayed with disinfectant, is only five cents a day, certainly a small sum to spend for the complete freedom from objectionable odors noted at Manchester. No matter how well a plant may be designed, the responsibility for its cleanliness and freedom from odors rests with the operating personnel.

The new refuse incinerating plant for the city of Manchester was designed by Metcalf & Eddy of Boston, Mass., under the direction of Harrison P. Eddy, Jr. It was built by Frederick Page Construction Co., of New York City, and placed in service December 1, 1937, under direction of Surveyor of Highways Francis B. Kenney. It is operated by John F. Martin, Superintendent.



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Equipment especially designed for use with the TD-18 includes **SCRAPERS, BULLDOZERS, BULLGRADERS, ROAD GRADERS, WAGONS, SNOW PLOWS, WINCHES, LOGGING ARCHES.** Company-owned branches and International industrial power dealers will tell you all about the features of the International TD-18 TracTracTor.

INTERNATIONAL HARVESTER COMPANY
(INCORPORATED)
180 NORTH MICHIGAN AVENUE CHICAGO, ILLINOIS

INTERNATIONAL POWER *is made by the makers of* **INTERNATIONAL TRUCK**

Sewer Cleaning in West Hartford

Separate System with Small Pipes Keeps One Crew of Four Men Busy

A LARGE part of the 130 miles of separate sewer system in West Hartford, Conn., consists of 8-inch pipe serving homes. The number of stoppages caused by accumulations of grease and sediment in these sewers is sufficient to keep the crew of four men busy most of the time. Where root growth shows in sewers, all nearby poplar and willow trees are removed. By continuing this program over a period of years, the really undesirable trees have been pretty well eradicated, but now some trouble is experienced with maples.

Typical Cleaning Job

The two OK Champion hand winches, sewer rods, cable and buckets are carried in a light truck with the crew of four men. To set up the machines for operation, two adjacent manholes, about 350 feet apart, are opened and the winches set up on the street. Sheave jacks are then set in the manholes near the bottom for carrying the cable and the bucket on its trips back and forth through the clogged sewer. Then the 3-foot sewer rods are hitched together and pushed forward from the lower manhole carrying the 3/16-inch cable or the heavier 3/8-inch cable.

As soon as the cable has been pulled through and affixed to the upstream winch, the operation of cleaning may be started. The bucket, a 6-inch diameter bucket for an 8-inch sewer, is then attached with the forward bail on the forward pulling cable for the cleaning operation, and the rear bail on the back pulling cable. The bucket is so made that the two halves of the pointed nose open when the bucket is pulled forward by the front bail, and close when the bucket is pulled back with the cable on the rear bail. Thus, when the bucket has filled, it is only necessary to pull back by means of the rear winch, and the rear bail closes the nose of the bucket and the load is retained. As the bucket swings into the manhole, it runs over the sheave in the jack and up to the street level. Here it is swung over to the truck in which the material is dumped for hauling away.

The town of West Hartford purchased its present sewer-cleaning machine about three years ago to replace one of the same make which had been in service for fifteen years. The machine as operated in West Hartford will remove root growths of moderate toughness. Where root growths have originated in house connections and entered the city sewer in this manner, they are removed by means of a small cutter attached to a set of sewer rods. In cleaning sewers the crew averages from 350 to 700 feet per day.

The 130 miles of sewers that serve the town of West Hartford, a residential suburb of Hartford, consist mainly of vitrified tile from 8-inch to 36-inch, and then concrete sewer pipe from 36- to 42-inch lines. The new trunk line recently completed connecting with the Hartford sewers and to the new Hartford sewage-treatment plant is a 42-inch concrete pipe. West Hartford has a population of more than 30,000 and an area larger than the city of Hartford, 21.8 square miles.

Catch-basin cleaning is done by a separate crew using hand spoons for the removal of the sand and gravel washed in from the gutters.

When new sewers are laid in the streets in undeveloped sections, Y's are set in the line every 50, 65 or 100 feet according to the lot sizes and carried to the street line and there capped. Licensed plumbers are permitted to make the house connections to these laterals. The volume of sewage in West Hartford has been increasing rapidly owing to the number of new houses built and occupied.

Noisy manholes are cured in West Hartford by the prompt application of a home remedy. Jute such as is used for the calking of the sewer joints is rolled and shaped to fit the seat of the manhole cover and then impregnated with asphaltic cold patch material.

Some Tough Cleaning Jobs

In discussing sewer cleaning with C. E. Barber, foreman of streets, and in charge of all sewer-cleaning operations, he told of a couple of out-of-the-ordinary sewer-cleaning jobs that some mischievous youngsters had made necessary at Halloween and other times. One group of ingenious youngsters rolled up half a hundred sheets of newspaper into long wicks or pointers and then poked them through the ventilation holes in a manhole cover. They made an excellent dam in the sewer as they reached the bottom of the manhole and before the trouble was discovered had backed up the sewage into a basement of a nearby house, and the city had to pay the redecorating bill. It took half a day with hand spoons to get the newspaper dam out of the manhole.

Another showed even more ingenuity on the part of the youth of the neighborhood. They maneuvered the oval gasoline tank from an abandoned automobile through a manhole and lodged it in the sewer 24 inches in diameter. The trick was done in the back lots where the sewer was not readily seen. It took the sewer maintenance crews nearly three days to get the tank out. Sewer rods run in from the manhole would not go by the tank. Finally the men gathered elderberry branches, which are very light, and made a small bundle of them. To this they attached the smallest cable and floated the bundle through over the tank. By attaching a hook to the cable at the lower end it was possible to dislodge the tank and open the sewer.

The entry of root growths into house connections is a cause of many complaints. Faulty joints attract the roots of nearby trees and soon the entire flow of house sewage is cut off. The solution is a tight joint, but except with cast iron pipe with poured joints it is almost impossible to get a joint that will last, taking into consideration the training of the average plumber in setting pipe and backfilling a trench so that there will be no settlement of the pipe. Mr. Barber has found a way that has done the trick for over five years on sewers that he has seen installed. Fill the trench around the pipe for about one foot with coal screenings. He said with a smile, "You never see anything growing on a pile of coal screenings." T. R. K.—908

$2000 Buys a Motor Grader..

that will keep your streets in shape the year 'round

With spring thaws your unimproved streets, alleys, park and golf course driveways, playgrounds, etc., are going to need attention. Shape them up in a jiffy, smooth as a floor, with this new Adams Motor Grader No. 20 which you can buy and operate at a cost that will please you and your taxpayers. If your streets are oiled and need scarifying, remixing and reshaping, it will handle that work for you, too, as pictured above.

Just because this machine sells for only $2,000 (whereas you have probably been thinking of motor graders as costing $3,500 to $4,000), don't conclude that it is a toy. This is a real machine capable of a surprising amount of work because of a special rear drive. Operates on one gallon of fuel per hour.

Mail the coupon below at once and let us put you in touch with our local dealer who will be glad to show you one of these machines and tell you more about it. Tear out, fill out and mail the coupon—now.

J. D. ADAMS COMPANY, Indianapolis, Indiana

Gentlemen: Please send me complete descriptive folder on your Adams Motor Grader No. 20, which you recommend for street and alley maintenance.

Name .....

Title .....

Address .....

ADAMS
MOTOR GRADER
NUMBER 20

Mention THE AMERICAN CITY—it helps.

Indexing Every Dollar Spent by the City

By VINCENT J. MURPHY

Director, Department of Revenue and Finance, Newark, N. J.

PRIOR to installing the present system of budgetary control, effective as of January 1, 1939, the city of Newark had no centralized accounting control over its budget commitments. The city's general ledger contained accounts for the various budget appropriations, and reflected disbursements out of the appropriations. However, commitments for work and material were not recorded in the city's accounts until after bills submitted by the vendors had been approved for payment by the Board of Commissioners. Consequently, financial reports could only show the amount of appropriated monies that had not been disbursed out of any account. No recognition could be given in these reports to the unpaid purchase commitments, since the amount was not known.

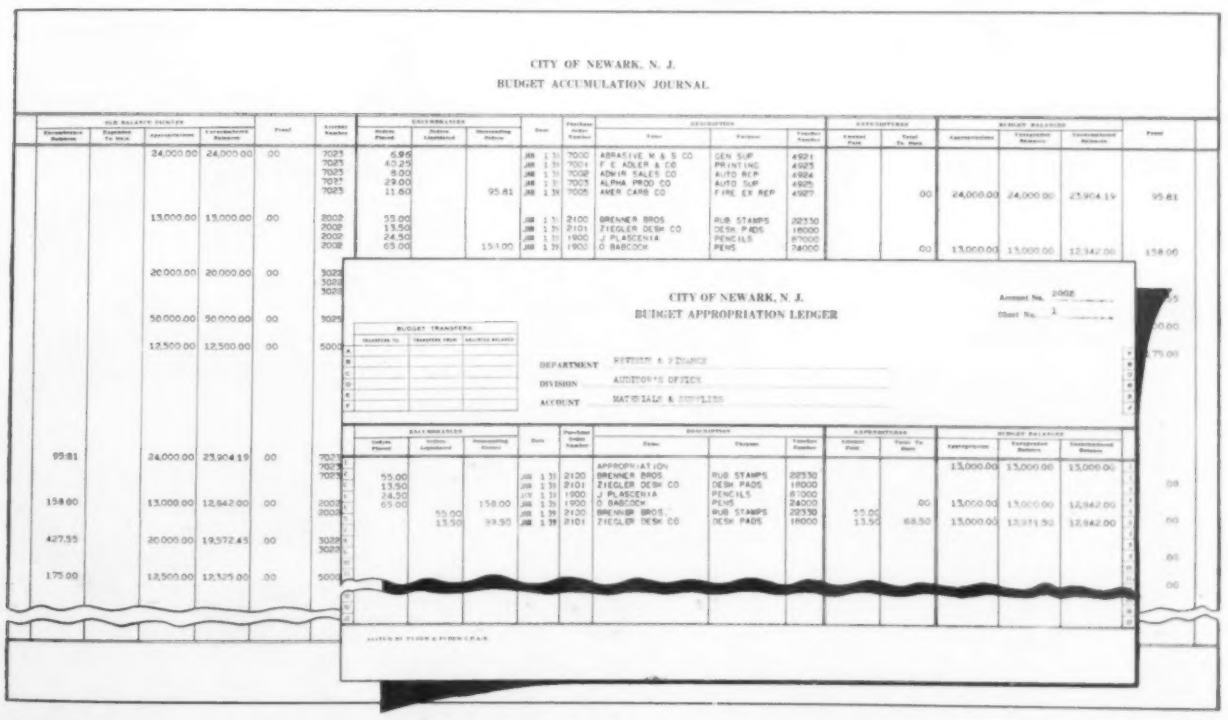
At my recommendation, the firm of Puder and Puder, registered municipal and certified public accountants, undertook the installation of a complete mechanized system of budgetary control. Two new Burroughs adding-typewriting budgetary machines were developed for the city of Newark. An appropriation budget sheet and a control sheet were devised, as illustrated here, to give the complete status daily of every budget appropriation account.

A separate budget sheet has been opened for each appropriation in the city's budget, together with five subsidiary budget sheets analyzing the budget appropriations as follows:

1. Personal Service
2. Service by Contract
3. Materials and Supplies
4. Fixed Charges
5. Equipment

The various appropriation and subsidiary sheets are all identified by a code of accounts that further extensively analyzes the various types of charges that are made to the five subsidiary budget sheets. This code number is placed in the column entitled "Purpose," as shown in the illustration. All these sheets are filed in two cabinets, which are also extensively used for the filing of individual tax ledger sheets, as described in the December, 1938, issue of THE AMERICAN CITY.

The budget sheets first show the amounts appropriated by the Board of Commissioners. All purchase orders prepared by the Department of Central Purchase are delivered to the Department of Revenue and Finance for approval as to availability of funds. When the purchase orders are approved by the budget clerk, they are released to the Department of Central Purchase for distribution to the vendor. One copy is retained by the budget clerk, and is im-



This budget sheet shows not only the unexpended balance of each appropriation but also the unencumbered balance. A complete record of unpaid commitments is carried on each budget sheet. All requisitions are approved by the budget clerk before the purchasing department can issue them, so that no commitment can be made where there is no available appropriation. As soon as a purchase order is approved by the budget clerk, the appropriation is encumbered for that amount

THE EASIER, QUICKER, CHEAPER WAY TO MORE AND BETTER STREETS

CHEYENNE, WYOMING
The new and more powerful Diesel No. 12 Auto Patrol is shown here scarifying a 3-inch oil mat preparatory to reprocessing.

EBENSBURG, PENNA.
A No. 10 "Caterpillar" Diesel Auto Patrol on road-widening work in outlying Fair Grounds section.

ITS STREETS are the first index to a city's progressiveness. Do yours say: "Here is a good place to live, to do business, or to set up an industry"? Versatile, fast-working, economical road-building and maintenance equipment is the key — a fine investment that can return its cost over and over through better property values, lower taxes, greater business turnover. With this equipment, outlying and neglected streets can be put into condition *at low cost* — to stimulate expansion projects, attract capital, encourage new developments, invite new residents, increase employment.

The Auto Patrol leads the "Caterpillar" line of city equipment because its all-around ability covers many jobs at a rock-bottom cost figure. Busy equipment is cost-saving equipment, especially when it is this low-cost power from Peoria that you will find busy scarifying, blading, mixing, ditching, bank sloping and clearing snow . . . all with a fuel consumption of *as little as one gallon of Diesel fuel per hour.*

Here is ample power and traction for tough going — speed for the light work; design and construction that assure thousands of hours of efficient operation; and up-keep costs that are pleasingly light under normal care and maintenance.

CATERPILLAR TRACTOR CO., PEORIA, ILL.

CATERPILLAR DIESEL POWER

REG. U.S. PAT. OFF.

DIESEL ENGINES • TRACK-TYPE TRACTORS • ROAD MACHINERY

mediately recorded as an unpaid commitment in the "Orders Placed" column shown in the illustration. This entry automatically reduces the unencumbered budget balance. At the same time the purchase order number, name of vendor, and the purpose of the purchase, identified by the appropriate code number, are recorded on the budget sheet.

Purchase orders are recorded daily, so that at any time I know exactly how much free balance remains in any budget appropriation account.

When the bills are approved by the Board of Commissioners for payment, the amounts of orders to be paid are recorded in the "Orders Liquidated" column, and the budget machine automatically computes the remaining balance of "Outstanding Orders." The amount of the approved bill is recorded as an expenditure, and the unexpended balance of the budget appropriation is calculated automatically by the budget machine. The amount of difference between the unexpended budget balance and the unencumbered budget balance is always equal to the amount of outstanding orders still to be paid.

As a result, the city will now have, for the first time, a complete daily control over its commitments and expenditures, and the detailed information on each budget sheet will provide invaluable assistance in the control of expenditures and preparation of our future budgets.

City Hydros with Diesel Standby

By M. P. GOUDY

City Electrician, Idaho Falls, Idaho

THE city of Idaho Falls, of 15,000 population, located on the Snake River about 125 miles south of the west entrance to Yellowstone Park, has owned and operated its own hydroelectric power system since 1900. The first plant contains four units having a total rated capacity of 2,000 kw.

By 1928, the original plant had become inadequate, and a site four miles up the river was developed. This new No. 2 plant has two modern 1,200-kw hydroelectric units. Then in 1937, the City Council, realizing that further power facilities were needed, purchased an old 600-kw private power plant located 1½ miles downstream from plant No. 1. This plant will house two 1,500-kw hydroelectric units, one of which may be installed this year.

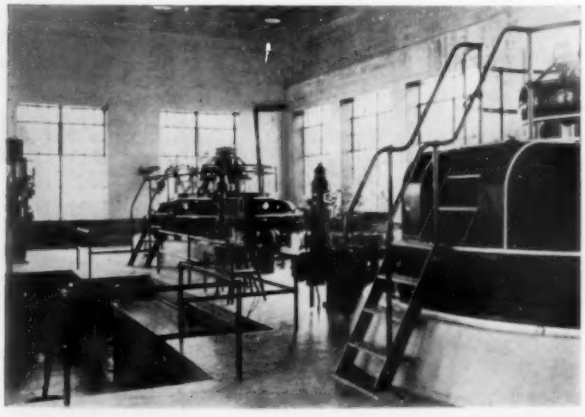
As this system has no connection with any other source of power, an independent reserve supply of energy is necessary. This reserve is furnished by a diesel auxiliary plant, consisting of a Fulton diesel engine with a 400-kw generator installed in 1926, and a Nordberg diesel engine with a 900-kw generator installed in 1931. The plant operates during the spring floods when, owing to extremely high water, the head on the hydraulic plants is reduced because of high tail-water conditions, and again in the fall when water is scarce. The diesel engines are extremely satisfactory, and can be quickly brought into service in case of emergency shutting down the main power supply.

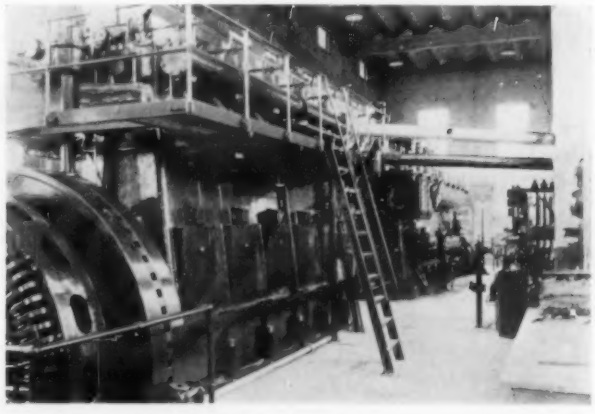
There are 3,500 customers on the city lines. The total output in 1937 was 22,000,000 kwh, of which 6,000,000 was used gratis by the city.

The revenue for the last fiscal year was $300,000, and $65,000 covers operating expenses. Neither depreciation nor fixed costs are charged against the utility, the difference between the gross income and operating expenses being used to finance extensions and improvements to the power system or diverted to the city's general expenses. The book value of the system is $725,000 against a total cost of $1,078,000. The city's bonded indebtedness is $84,500, of which $10,000 is electric-light bonds, and it is anticipated that all bonds will be retired in the next two years.

The system has been developed almost entirely on its own earnings. A bond issue of $35,000 was sold in 1919; and in 1928, to finance a major development in connection with plant No. 2, a bond issue of $100,000 was sold. Otherwise the system paid for its growth.

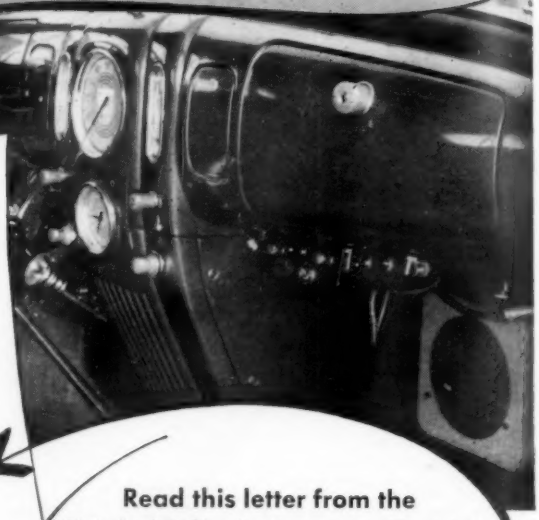
During the last seven years, the revenue has totaled $1,618,400; operating expenses, $389,700; $279,700 has been reinvested in the plant; $969,000 has been transferred to other operating funds of the city. The estimated value of free electric service for the seven years is $385,000.





IDAHO FALLS HYDRO PLANT NO. 2 AT LEFT, AND DIESEL PLANT AT RIGHT

Every POLICE DEPARTMENT CAN HAVE THESE RADIO ADVANTAGES!



POLICE HEADQUARTERS
E. A. GARNER, CHIEF

CITY OF SARASOTA
DEPARTMENT OF POLICE
SARASOTA, FLORIDA

Jan. 24, 1938

RCA Manufacturing Co.
Camden, N. J.

Gentlemen:

We are very well pleased with our police radio equipment. It has been performing very satisfactorily and giving us excellent coverage. We find that there is not one spot in the city where we do not get excellent service, and we find that tropical static does not bother us at all. We have tested the equipment for a distance of twenty miles and find we not only cover the city but to our agreeable surprise, cover an area twenty miles beyond the city limits.

We find that the police radio equipment has increased the efficiency of our police department to a great extent. We can give much better patrol service over a wider radius and we can release men for radio patrol who would otherwise have to remain at headquarters for emergency calls. Florida gets some undesirable characters in the winter time but this season we have not had a hold up or safe cracking job in Sarasota whereas cities on both sides of us which incidentally do not have radio patrol, have had safe robberies.

We are not only pleased with the installation and operation of the equipment but also with the excellent service you have given to us and if I can assist you by recommending your equipment to other cities, please let me know.

Very truly yours,

E. A. Garner

Chief of Police, Sarasota, Fla.

Read this letter from the Chief of Police in Sarasota, Florida! It tells a story of new departmental efficiency—the kind of efficiency you, too, will boast about when you use RCA Police Radio Equipment! And remember—the size of your department or city doesn't matter—there's RCA Police Radio Equipment for all, at prices to fit any budget.

☆

Listen to the Magic Key every Sunday, 2 to 3 P.M., E. S. T., on the NBC Blue Network

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For reliable performance night and day —use radio tubes marked RCA

RCA Radio Equipment for Motorcycle Police is sold exclusively through the Harley-Davidson Motor Co. and the Indian Motorcycle Co

RCA for POLICE RADIO

RCA Manufacturing Co., Inc., Camden, N. J. • A Service of the Radio Corporation of America

Public Works Equipment Includes Asphalt Plant

Taunton, Mass., Uses 100-Ton Plant for Street and Sidewalk Program

ONE of the functions of a city public works or street department is to operate as effectively as possible in the construction and maintenance of its streets and sidewalks and to produce the necessary materials for paving at the lowest possible cost. In some cities this is effected by the purchase of all paving materials in either the raw or the mixed stage. Taunton has used a city-owned 100-ton asphalt plant for street paving and maintenance and for sidewalk construction for ten years. Located in the City Yard with the equipment repair shop and garage, the plant is housed in a 60 x 90-foot building with a 30 x 100-foot wing, which was formerly used as a foundry.

Incoming aggregates are trucked to the back of the building, where they are delivered above the level of the floor of the building into a large wooden hopper. One man attends to the dumping and shoveling of the sand or stone into the hopper, from which they are fed by a reciprocating feeder to the cold elevator. One man at the bottom of the elevator watches the rate of flow and shovels material falling to the side back into the path of the elevator.

HAND SPREADING OF SAND-MIX IN SIDEWALK PROGRAM IN TAUNTON

The Asphalt Plant

The drier of the plant is 25 feet long and 4 feet in diameter and is fired by a large fuel-oil torch at the far end. Adjacent to the drier are two asphalt storage tanks of 2,000 gallons capacity, making it necessary to receive new shipments almost daily when the plant is operating continuously. The kettles are heated by an oil burner similar to those used for domestic heating and with a Minneapolis-Honeywell heat control to prevent coking the asphalt.

The power equipment for the plant consists of a 25-hp General Electric motor for the rotation of the drier and the driving of the blower which furnishes the air for the fuel-oil heating torches. Another 5-hp G-E motor drives the cold elevator and the dust blower which pulls the heat through the drier. The whole drier is mounted on a substantial concrete pier and I-beam foundation. Another 25-hp G-E motor mounted on the weighing platform drives the Dance pug-mill, which has a capacity of ½-ton. A 2-hp G-E motor on top of the asphalt tanks drives a shaft operating a reciprocating asphalt pump within the asphalt, raising it to the weigh-bucket on the operating platform. A 5-hp G-E motor, also on the operating platform, drives the hot elevator.

The sand and stone run through the drier is delivered at a temperature of 360 degrees F., and the asphalt is maintained at about 350 degrees. The screen at the top of the hot elevator is a rotary unit with sections for screening out ¼- to ⅜-inch material, 1-inch material and sand. It is 6 feet long and 2½ feet in diameter.

Fuel oil for the operation of the drier and the asphalt tank heater is stored on a trestle above the plant in a 10-000-gallon tank from which the feed is by gravity. Asphalt is trucked from Providence, R. I., and the hauling trucks pump the liquid asphalt into the storage tanks beside the drier. A No. 54 paving cement is used for most of the work in Taunton, particularly for the extensive WPA sidewalk paving program now under way.

With a 1½-minute mix in the pug-mill, the plant produces between 85 and 150 tons of mixed material in 8 hours. The operation of the plant is entirely in the hands of one man, who weighs the aggregates and asphalt and dumps both the materials into the pug-mill and the mixed material into the trucks below. The operation of the drier is the bottle-neck of the plant, for the material is not dried as rapidly as the batches can be mixed. The weigh-bucket for the asphalt is dumped by a chain, so that the operator is not required to put his hands near the hot asphalt. The fact that the plant is located inside a building is another safety factor in the handling of the asphalt bucket, since there are no bad gusts of wind to blow the asphalt around.

The mixes most commonly used at the plant are for street paving and for sidewalk work. The stone mix for street work consists of 500 pounds of ⅜- to 1-inch stone,

Where automobiles "grow"—*the choice is*

KARPARK *Automatics*

YES SIR, in Flint, Michigan, where they *know* what's best for automobiles and their drivers because they grow automobiles there—they install the "Thoroughbred" of parking meters!

Take a tip from the astute choice of these seasoned city officials.

The "Thoroughbred" Wins Again

After eleven months actual use of 567 Karpark Automatic Meters and eight months use of approximately 300 manual meters of another make, Paterson, N. J. now completes its original parking meter plan by installing 300 additional Karpark Automatic Meters.

Write or wire The Karpark Corporation for a detailed explanation of what KARPARK will do for your city—DO IT TODAY!

The installation of 500 KARPARK AUTOMATIC METERS in the city of Flint, Michigan, will be completed on or about March 15, 1939.

GRAYBAR ELECTRIC CO., who for 70 years has distributed high-grade products, guarantees KARPARK METERS and distributes them from 83 cities in the United States.

THE KARPARK CORPORATION

420 LEXINGTON AVENUE NEW YORK, N. Y.

500 pounds of sand and 60 pounds of asphalt. The sand mix for sidewalks consists of 1,000 pounds of sand and 60 pounds of asphalt.

The building is sufficiently large for the trucks hauling the batches to maneuver easily within the building. They are mostly 2½-ton dump-trucks and haul five of the plant batches. There are plenty of windows in the building, supplying adequate light, and also there are numerous large floodlights for use on dark days. Electricity for the motors and for lighting is supplied by the Taunton municipal electric light plant.

The plant is maintained by a mechanic on part time from the adjacent municipal equipment shop and garage. Electric welding is used for maintenance repairs. The plant is operated under the direction of Jeremiah F. Foley, Superintendent of Streets. T. R. K.—902.

Repairing Utility Cuts in Tampa

Fees for Openings Pay for Repairs During Settlement

BECAUSE the sandy subsoil which does not compact under rolling or hand tamping, but which the vibration of traffic over a period of months settles to such firmness that it takes picks to remove it, Tampa, Fla., permits temporary paving over utility cuts. It then repaves several times until the subsoil finally reaches complete stability under traffic. The fees charged for openings in pavements are sufficient to finance the two or more repavings of the cuts after the first temporary cover placed by the utility.

Tampa has 400 miles of streets, about half of which are paved with brick or asphalt block, and a small mileage of concrete and of sheet asphalt on a limerock base. The unpaved streets, of sand of variable stability, are maintained with a tractor and a blade to keep the gutters clear. In spite of the stability of the sand under traffic, shell bases where laid are easily removed by hand shovels at any time after they have been completed.

Section 990 of the Compiled Ordinances of the City of Tampa, as amended, prohibits the opening of any pavement in the city for the purpose of making a repair to or for the installation of an underground service without a permit issued by the City Engineer, except in cases of emergency. Individuals must make a deposit before making an opening, while public utilities operating under franchises from the city are permitted to post a bond in an amount approved by the City Commission to cover expenses of replacing the pavement. Even street-railway companies are required to make a cash deposit before any repairs may be made to the rails which would disturb in any way the adjacent pavement. The street-railway company is required to permanently pave and maintain the pavement between the rails.

Section 991 as amended sets the rates of deposits for the utility cuts in sidewalks, pavements and alleys as follows:

Class of Pavement	Cost Min. Charge 2 Sq. Yds. or Less	Cost Each Add'l Sq. Yd.
Waterbound macadam	$0.50	$0.25
Brick pavement on sand foundation, not grouted	1.00	0.25
Brick pavement on sand foundation, grouted with asphalt or tar	1.50	0.50
Brick pavement on sand foundation, grouted with cement	3.00	1.50
All pavements of concrete with concrete foundation	3.50	1.75
Asphalt macadam or sheet asphalt on rock base	3.50	1.50
Asphalt blocks on sand foundation	2.00	0.75

Section 993 covers the method of backfill. The backfill must be of suitable clean material free from rubbish of any kind, and be thoroughly rammed in thin layers to secure the best compaction possible. Flooding with water is required during backfill if the material is not rammed. The opening must be repaved with a temporary pavement immediately after the backfill is completed, and all excess material removed, leaving the street with a smooth surface, free of all dirt.

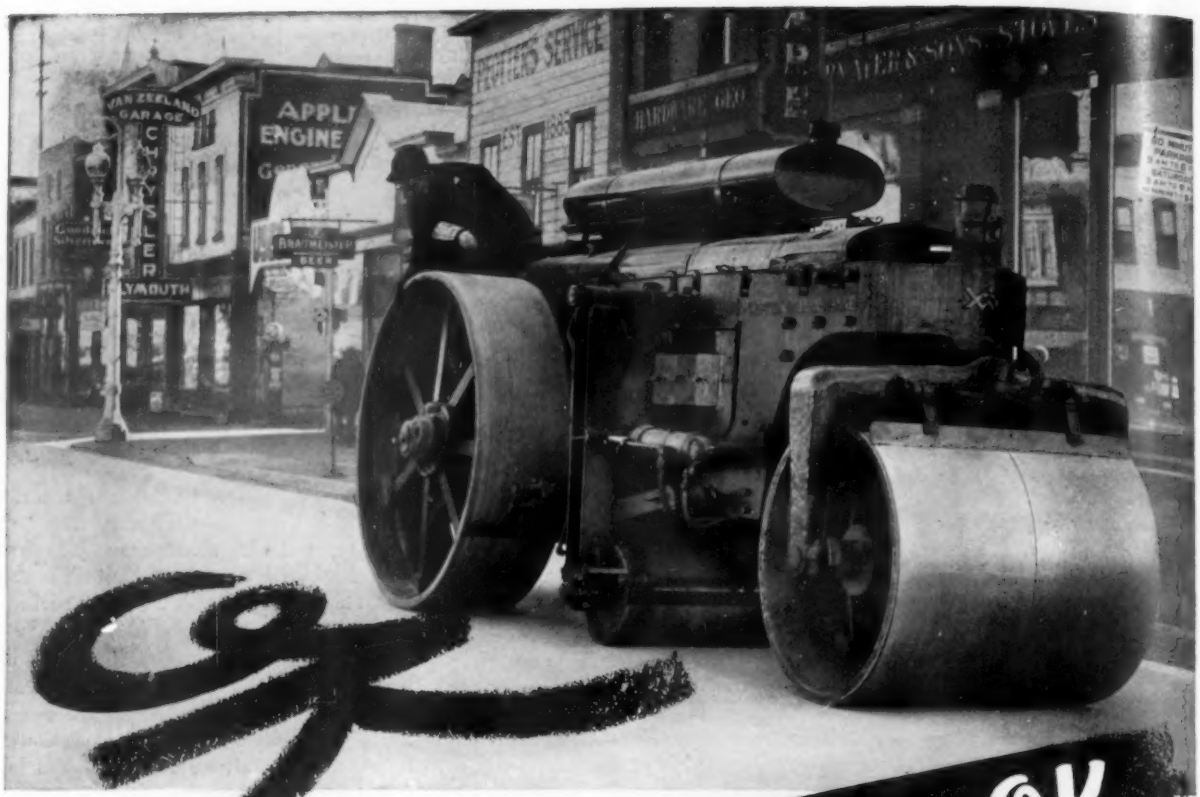
The original permit for an opening sets a time limit on the work, and if this is exceeded, the original applicant is required to make another application for a permit and pay the charges again. The city accepts the responsibility for settlement of the pavement after the original fill has been placed by the utility in accordance with the requirements of the ordinance. The only exception to this is when it develops that the backfill or the work beneath the surface was not properly completed and an unusual amount of settlement occurs, and then the utility is required to return and complete the backfill. T. R. K.—814.

When Uncle Sam Takes Land Off the Local Tax Roll

A SERIOUS problem in counties and municipalities where Federal projects have taken valuable land off the local tax roll is to be studied by a newly created governmental agency. On January 16 President Roosevelt established by executive order the Federal Real Estate Board, to be composed of representatives to be designated by the heads of the Departments of the Treasury, Agriculture, Commerce, Interior, Justice, Navy, and War, and of the Tennessee Valley Authority and the Bureau of the Budget. Important functions of the new Board will be to maintain a record of all real property, under the jurisdiction of the several Federal departments and agencies, that is not being utilized in whole or in part, and to make recommendations as to disposition of such property. The order also stipulates that:

"Executive departments and agencies contemplating the acquisition of additional real property are requested, before acquiring such property, to ascertain from the procurement division whether there is any real property in Federal ownership that may be made available for the purpose contemplated, and, in all cases in which such action may appear desirable, to consult with the Federal Real Estate Board regarding the acquisition of such Federal property for the use of their own department or agency.

"The Federal Real Estate Board shall study, and make appropriate recommendations regarding, the situation in different communities adversely affected by the loss of tax revenue on land purchased or acquired by the Federal Government."



. . . and ROLLED to stay O.K.

● Smoother streets and highways of even density are the best solution to increasing traffic wear with its mounting demands on your maintenance budget.

By using a Roll-A-Plane on the *subgrade*, you secure a dense, well-made foundation . . . eliminating the voids where moisture collects to cause heaving or frost boils.

By Roll-A-Planing the *base course*, the action of the center roll makes it necessary for the workmen to spread the stone evenly so that the material is not only keyed and compacted; it has surface smoothness as well. When the base is Roll-A-Plane finished, there can be no high spots to break through the wearing course and start washboarding or raveling.

Finally, for "straight edge" smoothness, use the Roll-A-Plane on the *wearing course*. With a smooth base course beneath, you are assured of an equal density at a minimum of rolling time . . . for the action of the center roll makes cross rolling unnecessary.

Ask us to describe the most recent developments in Roll-A-Plane practice, for the type of roads you are planning to build or rebuild this year.

The AUSTIN-WESTERN
ROAD MACHINERY CO., AURORA, ILL.

Motor Graders	Crushing and Screening Plants	Motor Sweepers	5-Yard Tractor-Scraper
Roll-A-Planes	Washing Plants	Shovels and Cranes	6-Yard Tractor-Scraper
Rollers	Blade Grades	Bituminous Distributors	8-Yard Tractor-Scraper
Snow Plows		Elevating Graders	12-Yard Hydraulic Scraper

During March we hope you will remember to mention THE AMERICAN CITY.

Chlorination of Sewage at Minneapolis-St. Paul

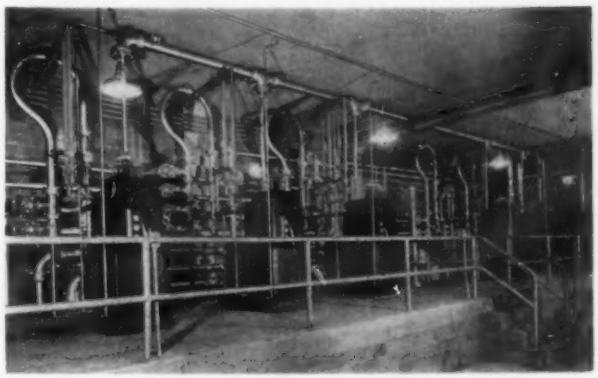
World's Largest Chlorination Plant in Operation

THE completion of the St. Paul-Minneapolis sewage-disposal project marks the culmination of nearly fifteen years of activity directed at a solution of the Mississippi River pollution problem at the Twin Cities. It has involved the consideration of forty alternate projects, with variations, and a thorough study of various treatment and sludge-disposal processes.

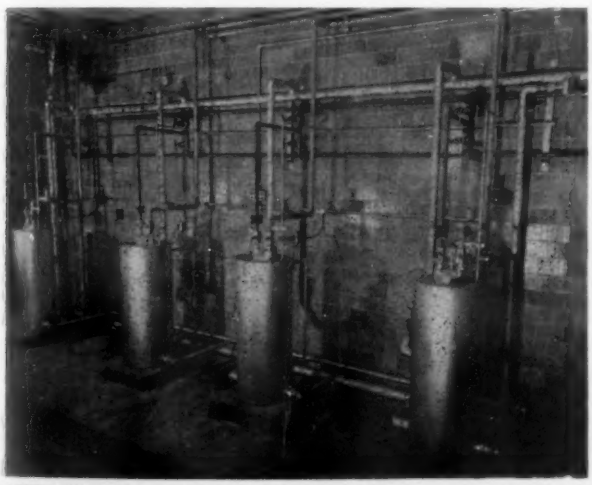
The present plant covers fifteen acres and occupies five modernistic type buildings. Construction was begun in September, 1935, and the plant was dedicated May 16, 1938. It has a maximum capacity of 610,000,000 mgd and cost nearly $16,000,000. Fifty-two miles of intercepting sewers were built, and nine miles of pipe of various sizes was required for services in the plant, which consists of screen and grit chambers, flocculating and settling tanks and effluent filters.

The treatment ordinarily provided consists of screenings and grit removal, sedimentation and effluent filtration. The sludge-disposal process consists of concentration tanks, vacuum filters and incinerators. To meet the demands of a modern treatment plant of this size and type where accurately controlled chlorine application is vital, Wallace & Tiernan visible vacuum chlorinators were installed. The chlorinator installation, believed to be the world's largest, consists of a battery of five 6,000-pound master chlorinators, standard units being revised and adapted to give the increased chlorine capacity required.

Each chlorinator is equipped with a single injector, separate from the control unit. Injector operation is secured by the use of filtered plant effluent pumped back to the chlorinator room. To provide the increased operating pressure made necessary by the extremely long solution lines, serving distant parts of the treatment plant, two pumps were installed to increase the initial pressure sufficiently. These pumps are installed in the room containing the large air compressor which furnishes compressed air for "padding" the tank cars of chlorine and for various other uses throughout the plant. Two auxiliary fresh-water lines are also provided for these chlorinators. One of these fresh-water lines is connected to a small steam water heater, thermostatically controlled, for use if it should be found advisable to slightly warm the water coming in contact with chlorine, in order to eliminate hydration difficulties.



THE INSTALLATION OF FIVE 6,000-POUND CHLORINATORS AT THE NEW MINNEAPOLIS-ST. PAUL SEWAGE-TREATMENT PLANT



THE CHLORINE EVAPORATORS, LOCATED BETWEEN THE TANK CARS AND THE CHLORINATORS, AT THE MINNEAPOLIS-ST. PAUL SEWAGE-TREATMENT PLANT

Chlorine is delivered to the plant in tank cars, each containing 30 tons of liquid chlorine. The cars enter the plant by means of parallel railroad tracks, one entering the building and one paralleling the outside wall. Connection is made to the tank cars by means of flexible pipe connections furnished by the chlorine manufacturers. These pipe connections are suitably valved both at the tank car and where they connect to the permanently installed duplicate lines of 1-inch black iron pipe which carries the liquid chlorine to the battery of four chlorine gas evaporators.

The normal gas pressure within the tank cars will usually keep the evaporators supplied with enough liquid chlorine to meet any demands from the chlorinators. However, additional pressure is provided in times of low temperature or when the cars are nearly empty, by the use of compressed air which is thoroughly dried by passage through duplicate chemical air dryers.

In keeping with the plan followed throughout the treatment plant, all the chlorinator piping has been arranged to give extreme flexibility and ease of handling. Throughout the plant continuous operation is assured, from the tank cars to the various points of chlorine solution discharge.

Chlorination is used not only for the purpose of sterilizing the final plant effluent, but is an important link in the chain of chemical treatment for the maximum removal of solids from the sewage.

When the **RED** *flashes...*

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Detail of Chlorine Flow

The path of the chlorine is from the tank cars to the four evaporators, where the necessary heat for evaporation of large quantities of chlorine gas is supplied by steam passing through copper coils in a water bath. A cylinder placed in the water bath receives the liquid chlorine from the tank cars and delivers chlorine gas to the chlorinators.

The chlorine evaporators are equipped with a thermostatic control on the steam inlet and in addition are furnished with a low-temperature alarm system so installed that the operator must go directly to the troublesome unit in order to stop the ringing of a 10-inch bell located above the recorder panel in another room.

To secure a dependable chlorine supply to all the chlorinators, a simple chlorine gas header layout was devised which, by means of suitable valve manipulation, permits any one evaporator to supply the chlorine gas required for three different chlorinators. Connections from the chlorinators to the rubber-lined cast iron pipe headers carrying the chlorine solution throughout the plant are also valved in such manner that each individual chlorinator is available for service at more than one point.

Perhaps one of the most striking features of the installation is the chlorine solution discharge header layout on the wall immediately behind the chlorinators. This, with its multiplicity of pipes, fittings and valves so arranged that the chlorinators may serve various points throughout the plant, is a fine example of header design.

Chlorine in Chemical Treatment

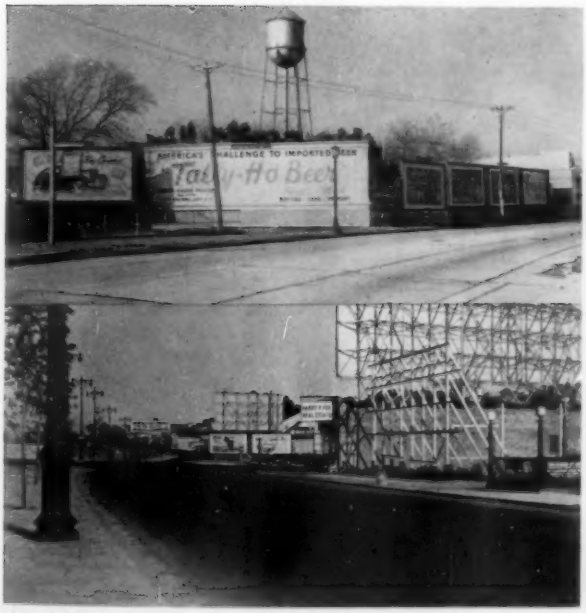
This plant depends upon the application of various chemicals for maximum efficiency in the removal of solids from the sewage, and in the use of these chemicals chlorine has an important role to play. Copperas is added from dissolving tanks through rubber hose to two reaction tanks. At these tanks chlorine in proper quantity is added, and the resultant solution of chlorinated copperas is carried through rubber-lined pipe to the points of application, one in each pipe line.

Located in the same chemical building are two large-capacity lime slakers. From these slakers, lime solution to which chlorine is added is carried through rubber hose to points of application in the main sewer lines.

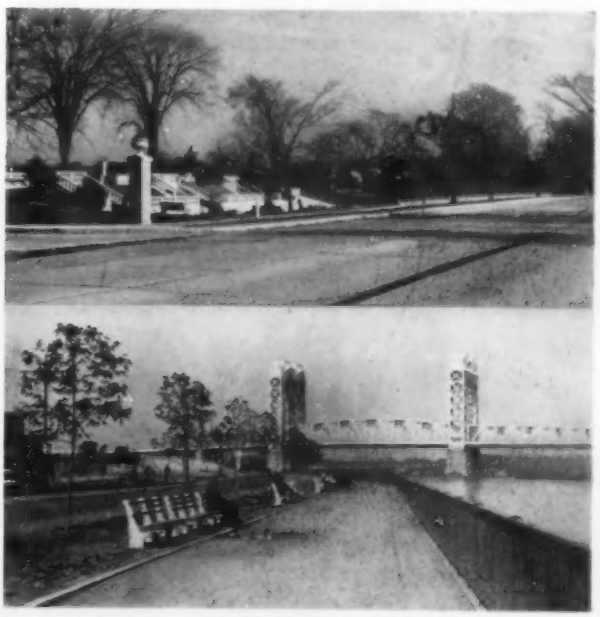
Another pair of rubber-lined pipes carry chlorine solution to the sludge-conditioning room, where it is combined with iron salts or used as a straight chlorine solution for conditioning sludge.

Two more rubber-lined pipes carry chlorine solution to the point of discharge of the down-flow magnetite filters, at the entrance of the effluent channels. Here the final effluent is sterilized and the contact period provided before discharge into the Mississippi River.

Why Should We Tolerate Defaced Roadsides Like These?



When We Might Have Protected Roadsides Like These?

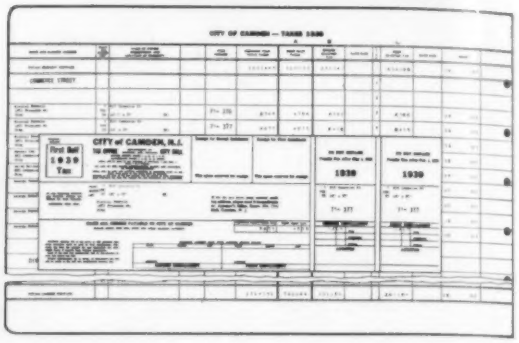


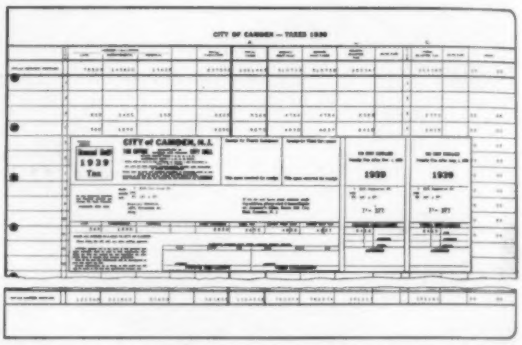
These are some of the effective illustrations used by the Long Island State Park Commission in its brochure, "The Billboard—A Blot on Nature and a Parasite on Public Improvements," mentioned on page 97 of THE AMERICAN CITY last month

"CAMDEN SOLVES ITS TAX ACCOUNTING PROBLEMS,"

says Mayor Brunner, "With Underwood Elliott Fisher Accounting Machines"

With Sundstrand Accounting Machines





SPECIMEN TAX RECORD SHEETS AND BILLS—*Tax Rolls and Bills are written at a single operation. Automatic multiplications, column totals automatically printed and "carried forward," as well as automatic checks on accuracy, save time, energy and money and make it possible for a small force to do a big accounting job . . . on Underwood Elliott Fisher Accounting Machines.*

"Realizing the need to modernize and co-ordinate the accounting systems in the Assessor's, the Comptroller's and Tax Offices," writes Mayor George E. Brunner of Camden, N. J., "we selected the Class D Sundstrand Accounting Machine as the equipment best fitted to do all of the accounting in these offices . . . The simplicity, ease of operation, visibility and extreme flexibility, as evidenced by the fact that the equipment can be changed from any one application to any other in less than three minutes, were the determining factors in our selection of your equipment . . . Due to the Sundstrand 10-key keyboard and many automatic features, any of our regular city employees can learn to operate the machines in a few minutes."

Camden, N. J. has followed the lead of many other municipalities and big business organizations in equipping with Underwood Elliott Fisher Accounting Machines. If you have a machine accounting problem, telephone your nearest Underwood Elliott Fisher Branch.

Sundstrand Model Underwood Elliott Fisher Accounting Machines in Assessor's Office, City of Camden, N. J.

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ELLIOTT FISHER ACCOUNTING MACHINES

Water Rates and Service Charges

1939 — Part I

Covering Domestic and Industrial Meter Rates, Discounts and Penalties, Installation Charges, Fire Hydrant Rentals and Fire Sprinkler Costs

Newport, R. I.

Present population	29,202
Population served	29,202
Number of active services	8,000
" " meters	7,085
" " hydrants	450
Miles of water main	53

The meter rates for water in Newport are:

First 24,000 gals. per year covered by minimum charge		
Next 276,000 gals. per year	$ .40	per 1,000 gals.
" 2,700,000 " " "	.30	" " "
All over 3,000 gals. per year	.20	" " "

The minimum charge per year, depending upon the size of the meter, is as follows:

⅝" meter	$ 15 00
¾" "	18 00
1" "	22 25
1½" "	33 50
2" "	47 00
3" "	83 00
4" "	137 75
6" "	263 00
8" "	407 00

Meter tests are made on written application of the owner to the Complaint Department of the Newport Water Works. If, after testing, the results show that the meter has been registering with substantial accuracy, the expense of the test is paid by the applicant, the minimum charge being $3.00. If the tests show the meter to have been faulty, an adjustment is made and the expense of the test is borne by the Water Works.

All applications for the use of water are made in writing at the office, and the various uses to which the water is to be applied are stated in full. Service pipes are laid to the line of the street and through the cellar wall, provided such wall is on the line of the street, without charge; and all applicants for whom such pipe is laid are charged for the use of one faucet, under the flat rate, whether water is used or not.

The first protection rates include public and private fire protection. The minimum charge to the city of Newport is $16,900, and to the town of Middletown, also supplied by the Newport Water Works, is $1,200. To this is added 0.8c per inch-foot for all mains in the distribution system, 6" or larger, laid after January 1, 1931, with substitutions on the same basis. In addition, there is a unit hydrant charge of $11.50 per year per hydrant; the hydrants being furnished and installed by the Water Works.

The minimum charges for private fire hydrants and automatic sprinklers are:

Size of Connection	Hydrant Service	Sprinkler Service with Detector of Protectus Meter
4"	$20 00	$25 00
6"	45 00	50 00
8"	55 00	60 00
10"	70 00	75 00

Private hydrants are furnished and maintained by the consumer.

FRANK P. KING,
Clerk and Water Registrar,
Newport Water Works.

The continued demand for copies of the reprints of water rates in the larger cities, published in The American City four and five years ago, has led to the publication of similar information from a wider population range. These reports will appear monthly, and will be reprinted later, with an index.

Little Rock, Ark.

Present population	85,000
Population served	105,000
Number of active services (within city)	17,750
Number of meters	17,750
" " hydrants	958
Miles of water main	225.35

The population served within Little Rock is 87,000. The larger population figure given above includes North Little Rock, where a private company owns the water system and purchases water wholesale from the Little Rock Municipal Water Works. All other figures above apply to Little Rock only.

The present schedule of water rates in Little Rock, which became effective April 1, 1936, is:

First	6,700 cu. ft. per mo.	$ .30	per 100 cu. ft.
Next	6,700 " " " "	.25	" " " "
"	20,000 " " " "	.22	" " " "
"	26,000 " " " "	.15	" " " "
"	32,000 " " " "	.12	" " " "
"	40,000 " " " "	.10	" " " "
"	1,201,900 " " " "	.0675	" " " "
All over	1,333,300 cu. ft. per month	.0375	" " " "

If the bill is paid in full on or before the 10th of the month following the original date of billing, a discount of 5% is allowed on that part of the bill which is for the first 6,700 cu. ft. of water per month or any part thereof. Bills are rendered monthly, and if not paid before the 20th day following the original date of billing, a penalty of 10% is added to the bill. If bills are not paid within 30 days, service is discontinued and a charge is made for again turning on the service after the full bill is paid.

The minimum monthly charges for meters are as follows:

½" meter	$ 1 25
¾" "	2 80
1" "	5 00
1½" "	11 25
2" "	20 00
2½" "	31 25
3" "	45 00
4" "	80 00
6" "	180 00 etc.

All services and meters are installed at the expense of the Water Department. The meters are set at the curb, and the consumer installs the rest of the pipe to and through his premises.

The city pays $35 each per year per fire hydrant. Special connections for private fire services are charged at the following rates.

Minimum charge per 1,000 heads or less	$27 50	
All additional heads	0275	each
Private fire hydrants	35 00	
Standpipe openings 1¼"	5 00	each
" " 1½"	7 50	"
" " 2"	12 50	"
" " 2¼"	25 00	"

L. A. JACKSON,
Manager, Little Rock Municipal Water Works.

New Brunswick, N. J.

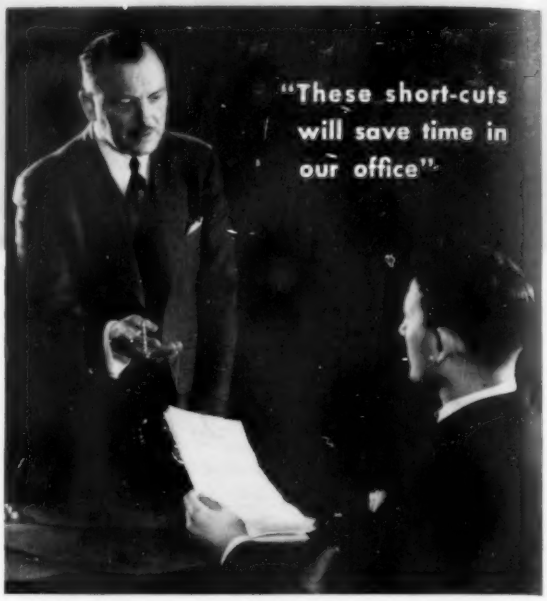
Present population	35,000
Population served	56,000
Number of active services	6,800
" " meters	6,800
" " hydrants	459
Miles of water main	68

The water rates in New Brunswick are $1.50 per 1,000 cu. ft., with a minimum rate of $15 per year. Where 500,000 cu. ft. or more is consumed in any one quarter, a charge of $1.35 per 1,000 cu. ft. is made. If meter bills are not paid at the end of 30 days, water is shut off until the whole amount due is paid, including the expense of shutting off and turning on the service. Interest at 6% is charged on bills in arrears. The water rent is a lien on the property and any contract for the payment of water rents by tenants does not affect the Water Department of the city. There is no service charge for domestic meters.

The Water Department makes the tap in the water main and charges the cost to the consumer. All services are installed by licensed plumbers.

Meters allegedly registering incorrectly

Here's the first step toward meeting an HOURS PROBLEM in the office...



Survey the work on each desk to determine whether your present routine handicaps your office force

Look for the "Bottlenecks"

If any department or individual is obliged to be inactive when work "clogs" at some other point, the cause of the bottleneck should be discovered. A slight change in equipment or routine may insure a more even flow of work.

•

Look for the "Peaks"

If figures are merely recorded from day to day, peaks arise when these figures have to be re-handled to prepare operating, financial and statistical reports and to analyze accounts and costs. Newer methods make it possible to iron out the peaks by eliminating costly re-handling of figures.

Look for Unnecessary Duplications

Duplication of media or records in a separate operation takes time and creates the possibility of errors. If unproductive intermediate steps are required to fit your work to your present machines or system, investigate "direct-to-final-results" methods.

•

Look for Needless Operations

Studying the work at each desk may reveal how a few simple short-cuts would save thousands of needless operations on your figuring, accounting, form-writing, and statistical work.

SEND FOR THIS BOOKLET!

For the executive concerned with the problem of conserving clerical hours, this new booklet contains many specific suggestions for readjusting office routine. Send for your free copy today.

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are tested by the Water Department for a charge of $3.00, which is refunded if the meter is not accurate.

No hydrant rentals are charged for city fire hydrants, nor for private fire lines, except the regular meter rate.

C. H. MORRIS,
Supervisor, New Brunswick Water Department.

Bowling Green, Ky.

Present population	19,500
Population served	19,500
Number of active services	4,175
" " meters	4,300
" " hydrants	267
Miles of water main	61

The water rates for metered service in Bowling Green are:

First	200 cu. ft.	$ .50
300 to 1,000	" "	.20 per 100 cu. ft.
1,100 to 2,500	" "	.15 " " " "
2,600 to 4,000	" "	.12 " " " "
4,100 to 5,500	" "	.10 " " " "
5,600 to 8,000	" "	.08 " " " "
All consumption over 8,000 cu. ft.		.06 " " " "

When an application for service is made, a deposit is required of consumers not owning property. The meters are read and the consumers are billed monthly. The city is divided into routes, the bills for the first four routes are due on the 10th of each month, the next four on the 15th, and the next three on the 20th of the month. A 10% penalty is added if the bills are not paid on the dates due, and service is disconnected if the bills are two months in arrears.

The charges for tapping and installation of services are $15 for a ¾" or ⅝" service, $30 for a 1" service, and $75 for a 2" service.

No charge is made to the city for fire hydrants connected to the mains, and there are no special charges for sprinkler heads for fire protection other than the metering of the service.

J. R. GRADY,
Clerk, Water and Sewer Departments.

Norfolk, Va.

Present population	130,000
Population served	157,000
Number of active services	29,984
" " meters	27,069
" " hydrants	1,444
Miles of water main	384

Consumers using 300,000 gals. or less per quarter pay 25c per 1,000 gals., provided that the minimum charge is $1.00 per quarter. Consumers residing outside Norfolk using 300,000 gals. or less pay 40c per 1,000 gals. and a minimum charge of $2.00 per quarter. Consumers within the city using over 300,000 gals. and not more than 2,200,000 gals. per quarter pay 25c per 1,000 gals. for the first 300,000 gals. and 15c per 1,000 gals. for all water in excess of 300,000 gals. Those using water in excess of 1,200,000 gals. per quarter pay the same rate as above for the first 300,000 gals., then 15c per 1,000 gals. for the next 900,000 gals. and 8c per 1,000 gals. for all water in excess of 1,200,000 gals per quarter. The city also sells unfiltered water outside the city at the rate of 14c per 1,000 gals. net.

A special lawn meter is installed for lawn sprinkling. If the quantity of water consumed through both the domestic and lawn meters exceeds 20,250 gals., or 2,700 cu. ft., during any quarter, the charge for the excess or any portion of the excess consumed through the lawn meter is at the rate of 12c per 1,000 gals. or 9c for each 100 cu. ft. per quarter. These reduced rates do not apply during the winter quarters.

Bills are payable quarterly and the city is divided into three districts. When a bill is not paid, the Division of Water Supply shuts off the water from the delinquent premises and it is not turned on until a charge of $1.00 for turning on the water, plus the entire amount of the bill, is paid.

The following service charges are payable in addition to the regular water rate:

⅝"	meter	$ 1.50 per quarter
¾"	"	2.00 " "
1"	"	4.00 " "
1½"	"	9.00 " "
2"	"	12.50 " "
3"	"	25.00 " "
4"	"	45.00 " "
6"	"	100.00 " "
8"	"	200.00 " "

Meters are furnished free of charge by the Division of Water Supply, but if a consumer wishes a larger meter, he must pay the difference in cost between the excess size and the size designated. When it is necessary to change a meter from a larger to a smaller size, the following charges are made:

1"	to smaller size			$ 3.00
1"	"	"	"	5.00
1½" and 2"	"	"	"	10.00
3" and 4"	"	"	"	20.00
6" and 8"	"	"	"	40.00

The city reserves the right to install meters on flat-rate services at any time without the consent of owners or tenants. All water meters remain the property of the city. All public buildings, including school buildings and municipal, state and Federal buildings, are required to be metered, and the prevailing rates are charged to the departments using these structures.

Consumers demanding the right to have a meter tested for accuracy pay the following costs, which are refunded if the meter is found to register 3% more water than actually passes through it. The water bill is correspondingly corrected:

⅝"	meter	$ 2.00
¾"	"	2.50
1"	"	3.00
1½"	"	3.50
2"	"	4.00
3"	"	6.00
4"	"	8.00
6"	"	12.00

Applications for connections to the water main must be made at the office of the Division, and the application must designate the point along the property line where the service is to enter the premises, and there must be separate water taps for each house. The fees for various sizes of taps are shown in the table below; a surcharge of 10% is made for taps outside the corporate limits:

¾"	tap	$ 20.00
1"	"	25.00
1½"	"	37.50
2"	"	50.00
3"	"	100.00
4"	"	150.00
6"	"	200.00
8"	"	250.00

In case of disconnection of a service, where a property is vacated, the following charges are made and collected when an application is received to restore the service:

⅝", ¾" and 1"	connections	$ 3.00
1½" and 2"	"	7.00
3" and 4"	"	10.00
6" and 8"	"	25.00

There are no hydrant rentals for the city fire hydrants. Water for a sprinkler system for fire protection must be supplied through a detector check-valve and by-pass meter installed at the curb line at the expense of the applicant in addition to the regular charge for connection to the main. No charge is made for the water used for fire purposes, but a service charge of $6.00 per year is made for reading the meters and inspecting the system.

E. H. HERBERT,
Assistant Engineer in Charge, Division of Water Supply, Norfolk, Va.

Muskegon Heights, Mich.

Present population	17,000
Population served	17,000
Number of active services	3,811
" " meters	3,764
" " hydrants	253
Miles of water main	55

The water rates for Muskegon Heights are somewhat different from most cities, as a minimum bill is issued monthly permitting the use of 5,000 gals. of water and including the cost of collection and disposal of sewage and other wastes. If paid on or before the 25th of the month in which the bill is rendered, the bill is reduced to $1.00. At the end of each 3-months period the meters are read and the customer is billed for the additional service along with his regular monthly bill. The minimum water bill figures 55c per month, to which is added a meter-rental charge of 10c per month. A discount of 5c per month is allowed on the water bill as stated above if paid on or before the 25th. The specific water rates are:

First	20,000 gals.	per month	$ .11 per 1,000 gals.
Second	20,000 "	" "	.10 " " "
Third	20,000 "	" "	.09 " " "
Over	60,000 "	" "	.08 " " "

If the consumer wishes his water meter tested, he deposits $2.00 with the City Treasurer, and the Superintendent of the Department of Public Service then has the meter tested. If it is found to be inaccurate, the deposit is refunded. A meter is considered accurate if the variation in the standard test does not exceed 2%. If the meter is found to be registering fast, the Department of Public Service credits the property owner or consumer with the sum equal to the per cent fast, multiplying the amount of all bills incurred by the consumer within the three months next prior to the test. In addition, if the meter registers slow, the Superintendent is empowered to collect in similar manner the amount due the Department.

Applications for service are filed upon special blanks furnished by the Department and signed by the property owner or his agent. The tap is made free by the Department, and the service is in-

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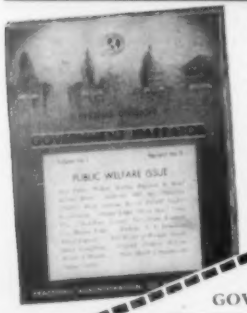

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I am interested in seeing a copy of your GOVERNMENT NARRATOR. Please send me a copy at once, without obligation, of course.

Particularly interested in Civil Service ... Or: ...
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BETTER STREET LIGHTING

HOLOPHANE REFRACTORS OFFER ALL THESE ADVANTAGES ★ MORE LIGHT ★ ECONOMY ★ SAFETY ★ SERVICE ★ CONTINUITY ★ HOUSE SIDE SHIELDING

A New Book "ADVANCED STREET LIGHTING PRACTICE" is available without charge. Write for your copy immediately.

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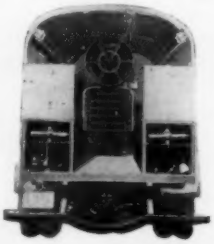
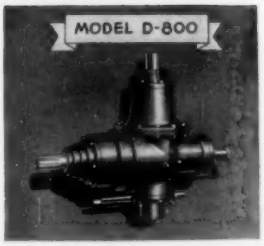
SAVE — WEIGHT, COST AND UPKEEP OF AUXILIARY MOTOR

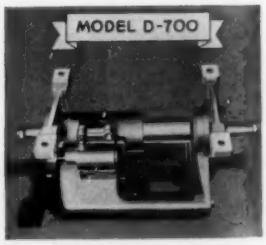
WITH HERCULES POWER TAKE-OFFS, EQUIPMENT IS OPERATED BY TRUCK MOTOR

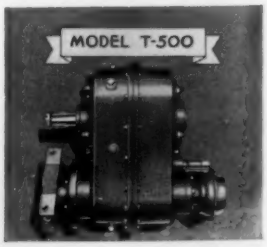


City Maintenance engineers everywhere are enthusiastic over the economies and efficiencies of operating truck mounted equipment with truck motors through Hercules Power Take-Offs.

Illustration shows truck-mounted air compressor in city use. A 1½-ton truck motor with take-off will operate any compressor delivering 105 or 160 cu. ft. at 100 pounds. WRITE FOR FACTS!







HERCULES
STEEL PRODUCTS CO.
GALION, OHIO

stalled by a licensed plumber. Water is not turned on until the service has been inspected and approved by the Superintendent and a meter has been installed. Any person who allows a meter to freeze or to be damaged by hot water is charged $2.00 for repairs for each occurrence, and no water is furnished through that service after the repairs until the payment is made.

In addition to the minimum bill rendered monthly by the Department of Public Service covering water and sewage, there is an additional charge for sewer rental as follows:

First	5,000 gals. per month	$ .09	per 1,000 gals.
Second	5,000 " " "	.08	" " "
Third	5,000 " " "	.06	" " "
Over	15,000 " " "	.04	" " "

The charges for sewage for the months of May, June, July, August, September and October are based on the average of the water consumed during the preceding months of November, December, January, February, March and April. During the six winter months, the charge for sewage is based on the exact amount of water consumed during this time. During the six summer months, water used but not returned to the sewage system is billed in addition in accordance with the rates above.

GEORGE F. LIDDLE,
City Superintendent,
Department of Public Service.

Fort Collins, Colo.

Present population	12,000
Population served	13,000
Number of active services	3,700
" " meters	700
" " hydrants	217
Miles of water main	75

For private dwellings flat rates are permitted, payable semi-annually, but all residences having an air-conditioner, gas refrigerator or other mechanical appliance which requires the continuous flow of water for operation, are not permitted to take water under the flat rate, but must install a meter. Such residences and all establishments or places of business, beginning January 1, 1937, were required to install meters and pay the following rates:

First	10,000 gals.	$ .20	per 1,000 gals
Next	40,000 "	.15	" " "
"	50,000 "	.10	" " "
"	400,000 "	.08	" " "
All over	500,000 gals.	.07	" " "

The sum of $1.00 is added to the water bill of each consumer, and if the bill is paid on or before 4 P.M. of the 10th day of the month in which the water bill is due, or the 11th day if the 10th falls on Sunday or a legal holiday, the extra charge is rebated. If the bill is not paid as required, the City Clerk is required to order the water turned off, and an additional charge of $1.00 is made for turning on the water for such property when the entire bill has been paid.

The minimum monthly guarantee for water, in addition to the meter charge, is:

⅝" meter, or smaller	$1.00	minimum monthly	guarantee	
¾" meter	1.50	"	"	"
1" "	2.00	"	"	"
1½" "	3.00	"	"	"
2" "	4.50	"	"	"
3" "	6.00	"	"	"
4" "	9.00	"	"	"
6" "	15.00	"	"	"
Larger "	25.00	"	"	"

In computing the monthly charge for metered water, the charge for the first 10,000 gallons is computed and then the amount is added for the second bracket or next 40,000 gallons, etc.

For each meter service, whether water is on or off, the following annual charges are made, payable monthly:

⅝" meter	$ 6.00
¾" "	9.00
1" "	12.00
1½" "	18.00
2" "	24.00
3" "	36.00
4" "	48.00
6" "	96.00

All over 6" at such rate as the City Council shall fix by resolution.

All meters are of a size, type and design approved by the City Commission and are installed and removed by the Water Department only. The cost of the meter and the expense of the installation and maintenance are charged to the owner of the property.

The charge per quarter for meter service and water taken through a meter outside the city limits, together with the service charges and quarterly guarantees for water, are as follows:

For each meter service, whether water is on or off, per year, payable in quarterly installments:

⅝" meter	$ 6.00
¾" "	9.00
1" "	12.00
1½" "	18.00
2" "	24.00
3" "	36.00
4" "	48.00
6" "	96.00

All over 6" at such rate as the City Council shall fix by resolution.

Rates for water per quarter are as follows:

First 10,000 gals.	$	40	per 1,000 gals.
Next " "		36	" " "
" " "		32	" " "
" " "		28	" " "
" " "		24	" " "
" 50,000 "		20	" " "
For all over 100,000 gals.		.18	" "

The minimum quarterly guarantee for water is as follows:

⅝" meter	$ 5.00
¾" "	7.50
1" "	10.00
1½" "	15.00
2" "	30.00
3" " , or larger	50.00

The tap fee outside the city is $5 plus the cost of labor and material used in making the required outlet.

Applications for services are made to the City Engineer and include all information necessary for a clear, concise record of the size of tap and location.

The tap and installation of the service is done by the Water Department. The cost of each ⅝" tap is $5 and includes the cost of the corporation cock. The cost of the permit includes the tap or taps, as well as the service. Special services may, at the option of the City Engineer, be billed when the work is completed, on an actual cost basis plus 10%. All fixtures between the main and the property line are maintained by the city at the expense of the owner. No property other than commercial or business is permitted to have more than a ⅝" tap for each 50-ft. frontage or less. For each additional 50-ft. frontage or fraction of more than 10 ft., one ⅝" tap is permitted. Commercial or business frontages may be granted larger taps if recommended by the City Engineer. Any premise which abandons the use of water forfeits the entire service between the main and property line to the city.

Where premises or building is connected to the sewer, there is added $1.50 per year to all other charges, for the use of the sewers. This charge is collected semi-annually.

BURGIS G. COY,
City Engineer.

East Detroit, Mich.

Present population	8,500
Population served	8,000
Number of active services	1,800
" " meters	1,800
" " hydrants	286
Miles of water main	70

The minimum charges for water service in East Detroit are $2.10 per quarter, allowing the use of 2,000 cu. ft. of water. Water used in excess of 2,000 cu. ft., and less than 12,000 cu. ft., is charged at $1.05 per 1,000 cu. ft., and over 12,000 cu. ft. at 90c per 1,000 ft. Water rates are due and payable the first day of February, May, August and November in District No. 2, and on the other quarterly months in the other two districts. Meters are read on or as near the 15th of the preceding month as possible. Bills are payable from the 1st to the 10th of the month, and after the 10th, if still unpaid, 5% is added. If not paid within 20 days after the 1st of the month, the water is turned off.

The city of East Detroit purchases water from the city of Detroit through master meters and is billed monthly at the same rate as Detroit consumers plus a 5% surcharge.

Upon application received from a consumer, the city makes the tap and installs the service from the main direct to the meter, which must be set in the house. Only where a temporary or garage home is placed at the back of a lot are consumers allowed to set a meter well just inside their lot line at a cost of $12, plus 5 ft. of service at 75c per foot. The city runs the service direct to the meter, as it is responsible for water losses ahead of the meter, and with its own crew making the installation it is assured that the material and workmanship will be of the best. The property owner is charged 75c per foot, or, if he chooses to do his own digging, the charge is reduced to 50c per foot. Plumbers or owners are not allowed to do any installation or repair work ahead of the meter.

The tapping fee for a ¾" tap on a 50-ft. street or narrower is $30, and from 51 to 66 ft. it is $35; over 66 ft. a charge of 75c per foot is made, or the same as for a service installation. The charge for 1" and 1½" services on streets less than 50 ft. are $52 and $80 respectively, and on 51- to 66-ft. streets, $60 and $107 respectively. The charges per foot on streets over 66 ft. are $.90 and $1.40 per foot respectively. Tapping fees for service lines over 1½" are time and material plus 10% overhead.

EDWARD N. SCHULTE,
Chief Clerk, Department of Water Supply.

(To be continued in the April issue)

POLICE RADIO BLANKETS OHIO

WITH 5 WESTERN ELECTRIC TRANSMITTERS

Notice how the five transmitters are "spotted" to cover Ohio. Immediate dispatching speeds up routine check-ups, simplifies handling of emergencies.

Equipment has been on 24-hour duty for 5 years.

Western Electric Police Radio equipment plays an important role in keeping Ohio police in constant touch with radio equipped patrol cars throughout the entire state. One 500 watt transmitter and four 400 watt transmitters were installed early in 1934 and have been on the job ever since.

In this case Western Electric Police Radio was chosen to *cover a large area.* On the other hand, many small towns with but one or two patrol cars have selected Western Electric equipment to add speed where it is needed most.

No matter whether you have a state, a county, a city or a small township to cover, Western Electric Police Radio can step up your police efficiency. It is getting results all day, every day in localities from Coast to Coast.

For full details on equipment to help solve *your* problems, write Graybar Electric Company, Graybar Bldg., New York City.

Distributed by GraybaR

Western Electric Police Radio is giving added protection to 45,000,000 people.

Western Electric

Distributed by GRAYBAR *Electric Co. In Canada: Northern Electric Co., Ltd.*

POLICE RADIO TELEPHONE EQUIPMENT

Trolley Coaches and Motor-Buses

Voice of the Cities

Part Two Wanted

WE trust that you will have a second article on "Mass Transportation," since your last one contained in the November issue of THE AMERICAN CITY was read with pleasure.

JOHN G. MARR,
City Planning Engineer, Oakland, Calif.

Modern Vehicles Wanted

TRANSPORTATION in Philadelphia is furnished by rapid transit, subway and elevated, and by street cars and buses. The principal needs are for fewer and newer street cars, more and newer buses and bus lines, an extension of rapid-transit service, and decrease in fares.

WALTER H. THOMAS,
Chairman, Technical Board, Philadelphia City Planning Commission.

Thinking Needed in Pontiac

THE five-cent fare is not sufficient to provide better service, and the people do not seem to favor a fare increase, though they would like to see an expansion of service. Our needs are for better buses, shorter schedule, more routes, and more paved streets.

LEWIS M. WRENN,
City Engineer, Pontiac, Mich.

Changes Contemplated at Long Beach

THE City Council was very much interested in your article which appeared in the November issue of THE AMERICAN CITY. They are especially interested in transportation problems at this time, as they are now contemplating the abandoning of railway transportation and substituting bus service entirely throughout the city of Long Beach.

E. L. MACDONALD,
City Clerk, Long Beach, Calif.

Good Service in McKeesport

DURING 1938, street cars to the business district were replaced by buses. The longest haul is three miles, the fare is 5 cents, and the riding public is pleased with the service. Congestion has been relieved by the recent completion of a mile-long boulevard 70 feet wide through the city parallel to and one half-block away from the main business street.

N. B. HOLMES,
Chairman, City Planning Commission, McKeesport, Pa.

Norfolk's Mayor Is Interested

THE November issue of THE AMERICAN CITY, especially the leading article entitled "Genuine Cooperation the Way to Modern City Transportation," is very interesting as well as instructive. While adequate transportation is provided in Norfolk, I sincerely feel that much can be derived from such articles bearing on "Genuine Cooperation."

JOHN A. GURKIN,
Mayor, Norfolk, Va.

Chicago Cooperates

THE article entitled "Genuine Cooperation the Way to Modern City Transportation" is a splendid analysis of the problems which cities and their local transportation companies face at the present time, and which the companies for the most part will have to solve, inasmuch as they are in the business and have the best knowledge of its intricacies.

The city of Chicago has been endeavoring to solve its transportation problem on the basis of consideration of the rights of the public, the employees and the owners of the properties, for a number of years, and will continue to do so. The city has assisted in many ways in order that the major companies might provide a reasonable service at a reasonable rate of fare. It has restricted competition, widened streets, provided loading platforms, restricted and prohibited parking, provided up-to-date traffic regulations and cooperated in securing scientific and economical routing. In fact, the city has done everything within reason that it could to enable the companies to carry on a profitable business.

JAMES R. QUINN,
Chairman, Committee on Local Transportation, Chicago, Ill.

Voice of the Operating Companies

How Cities Can Help

CITY officials can aid in bringing about transit improvements by acting strictly on the merits of the problem by viewing each situation in the proper perspective and refusing to be influenced by unjustified demands of insistent minority groups. They can greatly help by assisting the company to route its equipment most efficiently, by giving public transportation the consideration it deserves in the regulation of traffic and parking and establishing of stops.

It is important in the best interest of the city that public officials recognize the changed situation since the advent of the automobile; that today burdens which may have been justified at one time, such as snow-removal obligations, especial taxes, pavement repairs, etc., no longer are justified; and that adequate transportation under modern conditions can be maintained only by giving every possible assistance to the transit company.

R. B. THOMPSON,
Vice-President and General Manager, Duluth-Superior Transit Co., Duluth, Minn.

Useful Public Service

THE cover picture and the accompanying article beginning on page 43 of the November issue of THE AMERICAN CITY we think are of great interest and value in this problem, and we believe this issue of your magazine performs a very useful public service.

RAYMOND S. TOMPKINS,
Director of Information and Service, The Baltimore Transit Co., Baltimore, Md.

Transit or Congestion

IT IS my personal opinion that the answer to the acute traffic situation of most cities will be found by encouraging greater use of the mass-transit vehicles. In this respect the article is excellent and I believe your paper is the proper medium for the message it conveys. The front cover itself would make a thoughtful person ponder over the traffic congestion awaiting us if we allow mass-transit operations to be superseded by transportation by individually owned automobiles. The individual as a motorist forgets he ever was, or ever will be again, a pedestrian—or a street-car rider.

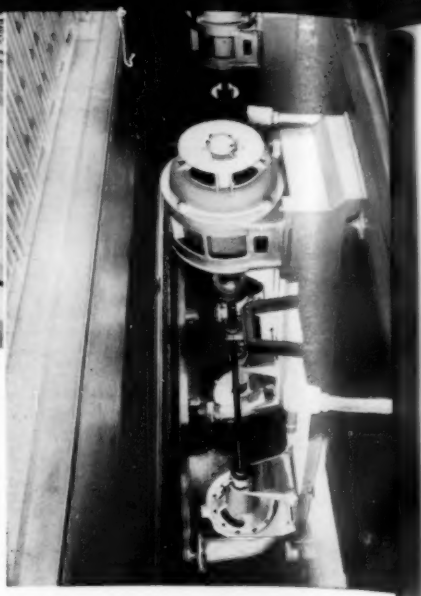
A. C. HOUGH,
Pittsburgh Railways Company, Pittsburgh, Pa.

Impartial Discussion

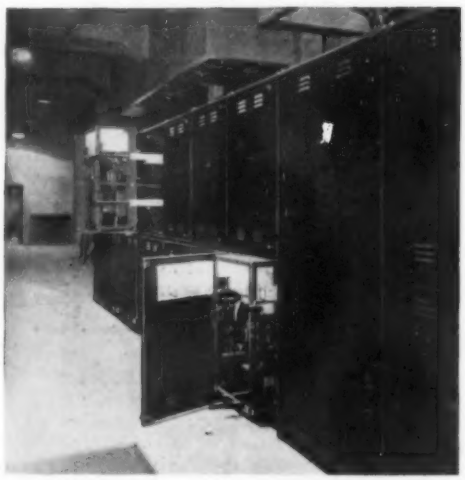
I BELIEVE that much good can come to both the transit companies and the municipalities by impartial discussion of the transportation problems in such magazines as yours. In discussing problems with city officials, I have always advocated that they look on the transit company as the Transportation Department of their city and recognize that adequate transportation facilities help the municipality. The transit company in turn should recognize its responsibility and endeavor in every way to live up to its obligation to the city and its people. The article in the November issue of THE AMERICAN CITY struck me favorably.

H. B. MCCUNE,
General Manager, Cooperative Transit Co., Wheeling, W. Va.

HOW G-E Equipment Helps Provide Clean Waters

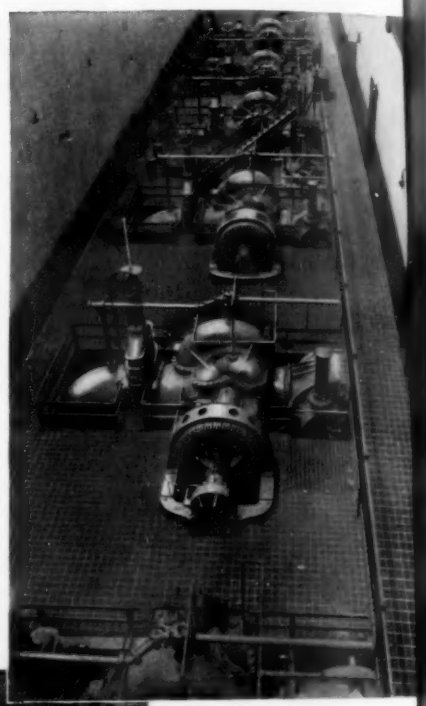


SMALL PLANTS, TOO depend on G-E equipment. Loo down on three G-E motors (5-, 7.5-, and 15-hp) mounted verti on the side of a wall in the Goshen, Indiana, plant. Each m is coupled to a centrifugal sewage pump. General Electric supply the electric equipment for any size plant



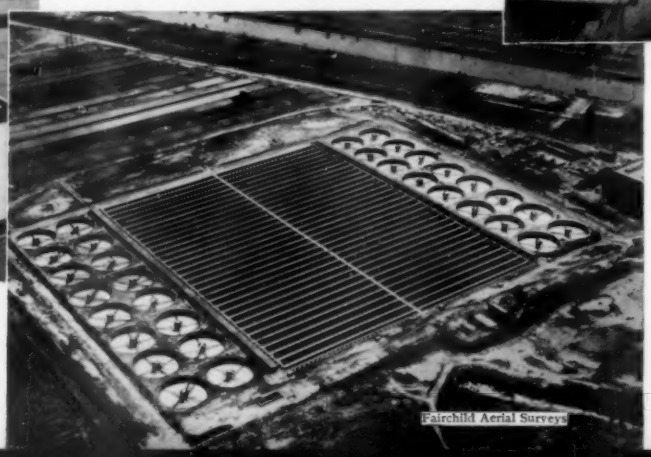
HERE you see a few of the many ways in which G-E equipment is used in sewage-treatment plants. Easy and low-cost operation results from the correct selection and application of electric equipment for such service. General Electric offers all types of electric apparatus for plants of any size.

One of our sales engineers will be glad to work with you and your consulting engineer. For the most desirable electrical layout, consult him *before* your plans reach the blueprint stage. Just call the nearest G-E office or write General Electric Co., Schenectady, N. Y.



PULLING OUT the air circuit breakers on G-E dead-front distribution boards like the one above is as easy as opening a steel filing cabinet. And it's just as safe, since the breaker cannot be pulled out until it is entirely disconnected

ASY OPERATION OF AN ENTIRE PLANT can be tained by the use of G-E control desks, such as this one the plant of Columbus, Ohio. Piping is shown in mini-ure. A "howler" and a red indicating light warn the erator if any piece of equipment needs attention. It's a od example of sound electrical planning



Fairchild Aerial Surveys

SIX 1000-HP G-E MOTORS direct-connected to a 90-mgd pu New York's huge Wards Island p The combination of four synchro motors and two adjustable-speed in tion motors assures good power-f and makes it easy to adjust the ra pumping to the sewage flow

NEARING COMPLETION is cago's huge Southwest Sewage ment Plant, where much of the el equipment is General Electric. Th Dorr clarifiers that flank the aer tank in the picture above ar equipped with G-E totally enc motors

GENERAL ELECTRIC

011-463

Forward Steps

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

"Citizenship Day" Climaxes Forums for New Voters

MADISON, WIS.—A plan of adult citizenship training and new-voter induction, inaugurated at Manitowoc, Wis., through its vocational school, is being coordinated into a state-wide program by the University of Wisconsin Extension Division.

This program, proposed by Prof. R. J. Colbert of the Extension Division, recognizes the fact that training for citizenship, long regarded a responsibility of our public schools, has outgrown grade-school assemblies and high-school civics classes. Today it is a problem of adult education. The major aim is to provide a means through which American citizens can better understand the principles upon which their government is based, and also better understand the part they, as voters, must play to assure long life to those principles. It does not relate to a flag-waving, eagle-screaming sort of active Americanism. It is a positive program through which Americanism is explained in all its ramifications without dragging anti-American "isms" into the picture.

This adult citizenship education is carried out through a series of forum meetings in each town, village and city ward of the county. The new voters—young men and women who have come of age during the year — participate in the forums in their home communities. These young voters conduct the forums themselves, under the leadership of specially trained leaders. The forums, based on local and county government, are intended to acquaint the new voters (and others) with the set-up of their government—as to which officials are elected and which ones are appointed, their duties and places in the lives of the citizenry. The forum leaders — social science teachers, civic leaders, governmental heads, business and professional people—will encourage and stimulate discussions and questions by the young voters without partisan prejudice or an effort to restrain the expression of their viewpoints.

As a climax to the forums, the new voters are inducted into the electorate, with appropriate ceremony, on the third Sunday of May. This is the day they "graduate" into electorship.

At Manitowoc, Citizenship Day will be May 21, 1939. On that day the new voters will receive certificates of electorship. Chief Justice Marvin B. Rosenberry of the Wisconsin Supreme Court will administer the oath of citizenship and deliver the induction speech. President Clarence A. Dykstra of the University of Wisconsin will deliver the Citizenship Day address. Other educators, jurists, and public officials will participate in the program, during which all citizens will be called upon to re-dedicate themselves to the principles of Americanism.

This plan of adult citizenship training and new voter induction aims to help toward:

1. Creating a sense of duty and responsibility that accompanies the rights of American citizenship.
2. Giving to the entire citizenry a clearer appreciation of its duties, responsibilities and obligations.
3. Developing a clearer understanding of the relation of local government to the state and nation.
4. Assisting in creating a higher degree of community spirit.
5. Counteracting unwholesome negative propaganda by generating an intelligent and creative participating citizenry.

The first state-wide Citizenship Day will be held in 1940, when the 50,000 new voters of Wisconsin will be welcomed into the electorate.

Many communities outside Wisconsin have indicated their intention to conduct programs of citizenship training and new voter induction, patterned after the Manitowoc plan. The University of Wisconsin Extension Division is assisting them in perfecting the organization necessary for setting up the programs.

RICHARD C. WILSON,
Extension Division, The University of Wisconsin.

Interphones for All City Department Heads

SAN FRANCISCO, CALIF.—Three years ago an inter-office communicating system was installed connecting the Mayor of San Francisco with his chief administrative officer, the City Attorney, and the Manager of Utilities. It was so satisfactory that a year ago it was extended to include also the

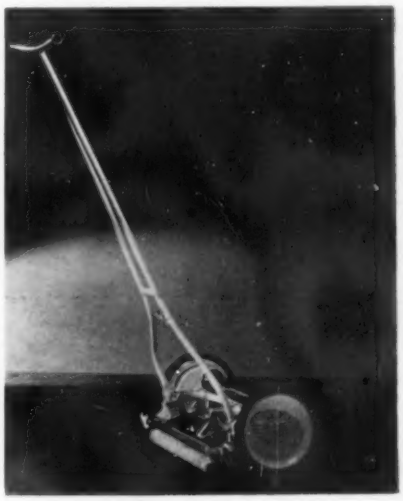
Controller
Purchaser of Supplies
Director of Health
Director of Public Works
City Engineer
Superintendent of Building Inspection
City architect

Thus the Dictograph system now embraces practically all the department heads, permitting prompt contact over private wires with ease and without delay.

W. H. WORDEN,
Director, Department of Public Works, San Francisco.

Makes Grass Cutting a Pastime

COUNCIL BLUFFS, IOWA.—We have two of the new Clemson lawn mowers, and though they have been in service only 1½ months, they are in my opinion the best lawn mowers we ever had, and we all like them.



The machine makes a 17-inch cut, weighs only 32 pounds including rubber tires, and requires no lubrication or grinding. The turning of one knurled knob adjusts the clearance between bed-knife and fly-knife. The entire fly-knife assembly is cast as one complete unit without rivets, collars and floating spiders.

The mower has few parts, pushes easily and cuts evenly.

JOHN L. CHRISTENSEN,
Fairmount Park, Council Bluffs.

City Parking Areas the Solution

NEW BRUNSWICK, N. J.—The City Commissioners of New Brunswick have established two free municipal parking areas in a determined effort to remedy parking and traffic congestion. The first area provided is in the rear of City Hall, and accommodates 75 cars. The second area, obtained through foreclosure of tax liens, accommodates 150 cars, and is within three minutes' walk of any spot in the business district. Both these ventures have been very successful.

ALICE L. BURNS,
Principal Clerk, Department of Public Works.

Next in importance to cast iron pipe itself for underground conduit construction is the bell-and-spigot joint, most widely used of joint designs. For special purposes, however, U. S. Cast Iron Pipe is available with U. S. Mechanical Joints; Usiflex and other types of flexible joints; in flanged types; and with plain and threaded ends. Information regarding their advantages and applicability to your needs will be sent promptly on request.

Centrifugally or pit cast—for water works, gas, sewerage, drainage and industrial service.

U. S. PIPE & FOUNDRY CO.

General Offices: Burlington, N. J.

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U.S. cast iron PIPE

FHA's Largest Rental Project Under Way

LOS ANGELES, CALIF.—The largest single project yet initiated under the Federal Housing Administration's rental-housing program and the first major one to be permanently financed by a commercial bank is now under construction in Los Angeles, *The Insured Mortgage Portfolio*, FHA's magazine, reports in its February issue.

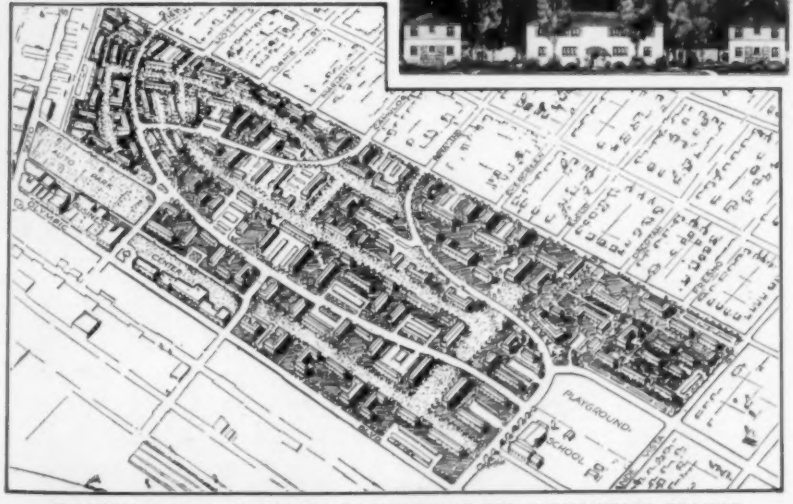
Known as Wyvernwood, the project was financed by the Bank of America National Trust & Savings Association through a $3,000,000 FHA-insured mortgage. Heretofore nearly all the larger rental projects initiated under the FHA program have been financed through insured mortgage loans advanced by insurance companies.

Wyvernwood will consist of 142 group houses and apartment buildings, occupying about 68 acres and providing dwelling accommodations for 1,102 families. The project embraces 4,425 rooms and garages for 1,167 automobiles. The sponsor of the project is the Hostetter Estate, which owns the tract.

Located in an area zoned generally for light industry, Wyvernwood is designed to provide dwelling accommodations for office and skilled factory workers. Three types of dwelling units will be offered, one of 3 rooms renting at $28 to $30 a month, one of 4½ rooms at $34 to $36, and one of 6 rooms at $42 to $45. Average rent per room per month for the entire project will be around $7.59.

The buildings will be two stories high and of frame and stucco construction, with concrete foundations. The apartment buildings are laid out in U-shaped groups. The row houses follow simple English design. Garages are grouped in compounds, with none farther than 50 feet from the dwelling unit it serves.

Plans for the project seek to take every advantage of the site's topography in creating a self-contained community and to combine maximum privacy with ready accessibility.



SUBDIVISION PLAN AND TYPES OF HOUSES OF THE WYVERNWOOD PROJECT, LOS ANGELES

Boston's Interest in Public Housing

BOSTON, MASS.—Participation in subsidized housing will bring about the redemption of numerous areas in our city which the passage of time has rendered unfit for habitation under the American standard of living. It is admitted that private capital would be either unwilling or unable to reclaim these areas, which even now are in such dilapidated condition that they tend to depress property values in surrounding neighborhoods. Reclamation of these areas by the Housing Authority will not only improve property and property values, but will also improve the health of the thousands of children who will be housed within these projects, now resident in the main in crowded homes, without heat, and with improper and inadequate sanitary facilities.

Future Boston will be the better for the citizens who will have an opportunity to grow and develop, sound in mind and body, by reason of the clean and healthy environment the new housing will provide. Furthermore, the housing program, in addition to the large building program now in prospect by private interests, should insure employment for practically all the building mechanics now resident within the city of Boston before the end of the present year.

—From Mayor MAURICE T. TOBIN'S recent Annual Message to the City Council.

Achievements of Small City under Woman Mayor

ELLSWORTH, KANS.—When I took office, in 1933, the city had overdrafts amounting to some $9,000, and a newly enacted cash-basis law prohibited spending money for anything unless funds were available. The first necessary step of the administration was, then, to put our financial house in order. By a small bond issue, and by staying strictly within our budget, this has been accomplished and finances have ceased to be a worry.

About the time we got the finances straightened out, we found the Water Department was in bad shape. Previous years had seen water restrictions imposed on the citizens during hot weather and the closing of the municipal swimming pool. With some change in the personnel of the Department and the acquisition of new equipment at a nominal cost, this situation was remedied, and since that time our water troubles have been reduced to a minimum and the revenue from the sale of water has been sufficient to help materially in the reduction of taxes.

With the advent of the PWA program, a government grant was obtained which made it possible to construct one of the finest municipal buildings for a town of our size in this part of the state. It fills a long-felt want, and is probably the most outstanding civic improvement in the history of our town.

Taking advantage also of WPA help, a great number of unsightly objects were removed from city property and the appearance of the city greatly improved thereby. Government funds have also made possible the construction of a sewage-disposal plant—long needed in our city; the paving of alleys in the business section; extensions to the water system; renovation of the swimming pool, beautifying park areas and cemetery, etc.

CLARA WILLIFORD,
Mayor.

City Manager Appointments

JAMES W. ASTON, Assistant Director of Finance, Dallas, Texas, has been appointed City Manager of Bryan, Texas, to fill the vacancy created by R. G. Williams' resignation.

Charles Carleton has been appointed City Manager of Lakeland, Fla., effective March 1, to succeed Charles Larsen, who returns to the position of Superintendent of the Water and Light Plant.

At the request of a large majority of the business and professional men of the town, Bob Lines was reappointed City Manager of Walters, Okla.

F. L. Hendrix, local insurance and real estate broker, has been appointed City Manager of Clearwater, Fla., to succeed A. C. Nichols.

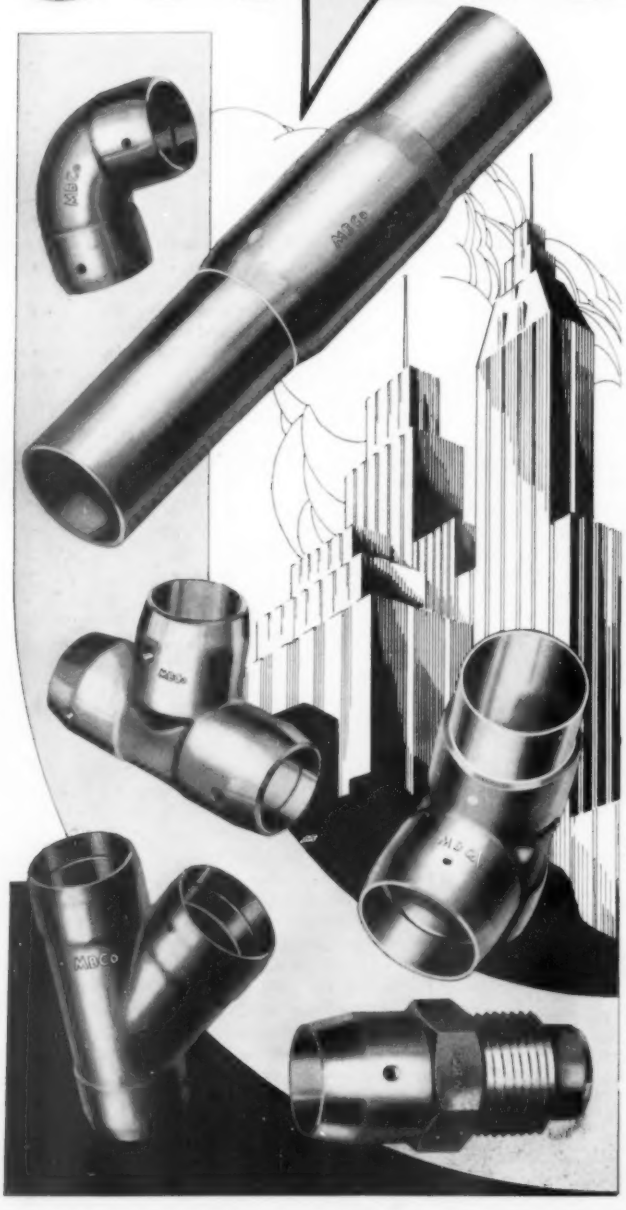
J. N. Miller has been appointed City Manager of Daytona Beach, Fla., to succeed Francis R. Mills.

H. H. McCanna, a WPA engineer of Richmond, has been appointed City Manager of Crewe, Va., to fill the vacancy created by the death of William P. Taylor.

Walter Smith, Superintendent of Public Works, has been appointed City Manager of Wheeling, W. Va., effective April 1. He succeeds Harry J. Humphrey, who resigned this position.

CLARENCE E. RIDLEY,
Executive Director, International City Managers' Association.

WHEN YOUR CITY PLANS CALL FOR PIPE AND FITTINGS Check STREAMLINE



A STREAMLINE copper piping installation, whether it be for plumbing, heating, industrial or water works use is the most modern and efficient system on the market today.

STREAMLINE fittings are not connected by threading or flaring the pipe but by an entirely new and revolutionary method that utilizes nature's law, capillary attraction, to form one of the tightest and strongest joints known to the trade.

STREAMLINE copper pipe cannot rust and since it is not connected by threading, the wall need not be so heavy. Pipe which is threaded to connect must have a much heavier wall because the thread diminishes its thickness and the strength of the pipe is therefore limited to this diminished wall thickness while on the balance of the pipe expensive surplus material remains but gives no service for its additional weight and consequent cost.

STREAMLINE copper pipe utilizes only that wall thickness required for actual service and the fitting actually reinforces the connection, making it the strongest point, while with threaded pipe it is the weakest.

A STREAMLINE service line is vibration proof. The effect of vibration is harmlessly dissipated over the entire installation and not localized at the joint. Settlement of filled earth or water mains, etc. does not affect it. STREAMLINE fittings and copper pipe are the ideal materials for water works use; for many applications in filtration plants; in aeration lines and in heating coils using the sludge digestion system in sewage disposal plants—and for all general plumbing and heating purposes.

When your city plans call for pipe and fittings for any purpose, consider STREAMLINE materials carefully before you buy.

Send for STREAMLINE Catalog W-3.

STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

European Housing and Planning Tours

Three Tours Planned for This Summer of Interest to Readers of The American City

Tour Under Leadership of Albert Mayer

ALBERT MAYER, well-known architect and planner, of New York, is to lead an interesting tour to Europe in the interests of housing and city planning. He will be accompanied by a small group of people especially concerned with these subjects. The itinerary includes England, Sweden, Denmark, Holland, Belgium and Paris. The group will leave New York on the Scythia June 23 and return on the Aquitania August 1. The entire cost will be in the neighborhood of $650, including Tourist Class accommodations on the steamers. William M. Barber, Travel Bureau, Babson Park, Wellesley, Mass., is taking charge of the business arrangements.

Throughout the trip housing developments and city plans will be visited and examined closely. Mr. Mayer will provide the historical background and will talk informally on the sociological and architectural features. There will also be sightseeing programs in the various cities visited, and the recreational features, so important on any European trip, will not be neglected. In many places it will be possible to talk to leading housing and city planning authorities and to discuss their various projects with them.

In Stockholm the group will attend some of the meetings of the International Federation for Housing and Town Planning.

National Public Housing Conference Tour

THE National Public Housing Conference announces its Fourth European Housing Survey Tour. This summer the tour will be under the leadership of the Conference's Vice-President, Irving Brant, journalist and consultant of the Department of the Interior, and will include visits to housing projects erected by local housing authorities in the cities of Copenhagen, Stockholm, Leningrad, Moscow, Prague, Paris and Amsterdam. The party will also stop over for brief visits in Helsingfors, Warsaw and Rotterdam.

Travel arrangements will be made through the Open Road and its European representative, the International Student and Hospitality Association, with local programs organized and directed by municipal housing departments. Membership in the party is open to any person interested in housing from its social, economic or technical aspects.

Sailing from New York on the S. S. Statendam, on June 22, the party will return August 10 on the S. S. Nieuw Amsterdam. The all-in cost of the tour is $598. Inquiries should be addressed to Miss Helen Alfred, Executive Director, National Public Housing Conference, 122 East 22d Street, New York.

Tour Under Leadership of Dr. Jerome Davis

DR. JEROME DAVIS, who taught for thirteen years at the Yale Divinity School, is again taking a select group to Europe this summer for the Bureau of University Travel. The group will visit eleven countries, interviewing leaders in the governments as well as taking in the major points of interest. The cooperative movement will be studied in Denmark and Sweden.

Last summer, in London, the group met with Malcolm McDonald, British Minister of Colonies; spent an evening with Professor Harold Laski of the London School of Economics; conferred with the well-known author G. D. H. Cole; and heard the Foreign Minister, Lord Halifax.

The total cost of the trip, New York to New York, is $695, including all expenses. Inquiries should be addressed to Dr. Davis at 489 Ocean Avenue, West Haven, Conn.

Plans for International Housing and Town Planning Congress

THE preliminary program of the Stockholm meeting, July 8-15, 1939, of the International Federation for Housing and Town Planning, lists an interesting and important range of subjects. The three main topics and the discussion leaders will be:

1. *House Building for Special Groups*—J. de Jonge van Ellemeet, formerly Director of the Municipal Housing Department, Rotterdam.
2. *Town Planning and Local Traffic*—Landesrat R. Niemeyer, Berlin, President of the German Academy for Town Planning, National and Regional Planning.
3. *Administrative Basis of National Planning*—Dr. Albert Lilienberg, Director of the Town Planning Department, Stockholm.

Following the Congress, delegates will have a choice of three study tours which are being planned by the city of Stockholm. For complete program of the Congress and Study Tours, address Mrs. Paula Schafer, Secretary, Cantersteen 47, Shell Building, 608, Brussels, Belgium.

All-Metal Public Works Building Changes Location

ANTICIPATED as a probability at the time of erection seven years ago, removal of the all-metal office building of the Department of Public Works, Richmond, Va.,* for a distance of 400 feet, has recently taken place. The building is being moved from the corner of Twelfth and Broad Streets to a new location on Governor Street, in order that the New Virginia State Library may be erected on the old site.

The contract time for moving the building was 60 calendar days from date of award of contract, during which time the building was maintained in a livable condition with all service facilities, including heat, light, telephone, water and sewerage; without interruption to the routine work of the Department or its accessibility to the public. The cost for moving was $30,900.

The building is a two-story structure with full basement, rectangular in shape. Above the first floor, metal predominates on both exterior and interior surfaces, the basement being of masonry construction. The inner and outer walls are of aluminum, partitions and doors of aluminum sheet. The casement windows are steel. The entire structure is assembled on a structural steel framework.

Because of the relatively light weight of the building, it was decided to move the unreinforced concrete basement walls with the building, in order to lower the center of gravity and to obtain additional longitudinal stiffening of the structure. The columns were unbolted from the concrete footings, holes were cut in the basement walls below the window line for timber grillage, and after underpinning the structural framework, the basement walls were cracked at the top of the footing course.

The original cost of the building, including all appurtenances, was $50,117.59, or about 22½ cents per cubic foot. The actual annual cost, including allowance for interest on and amortization of capital outlay within the actual period of occupancy on its original site, for additions and betterments, janitor service, gas, light and water, and repairs, has amounted to $14,887.89, or $1.19 per square foot. The annual average cost of repairs has been $117.45.

When bids were asked on the all-metal building in 1931, it was found that the all-metal building, on the city-owned lot, would, over a period of seven years, cost

* Described in the August, 1932, issue of THE AMERICAN CITY, page 79.

Dangerous Waters!

WHEN floods bring the threat of polluted water supplies and of water-borne disease, HTH proves itself an invaluable ally to water works and health officials. With HTH, emergency hypochlorination can be applied quickly, on the spot, wherever pollution is found. A highly concentrated chlorine carrier, containing 70% of available chlorine, quickly soluble in water, HTH can be transported to the job and put to work before a dangerous situation has time to develop.

Then there is the aftermath of flood conditions, as receding waters leave a seemingly hopeless task of cleaning up and disinfecting flooded areas and buildings of every kind. Here again health authorities find HTH of invaluable assistance in restoring sanitary conditions in scores of places where a less concentrated, less mobile or less soluble source of chlorine cannot serve as effectively.

Fortunately, floods do not strike frequently at the average community nor do they strike so quickly as to find local officials wholly unprepared. But there are day-to-day emergencies, too, which require prompt and effective chlorination—broken water mains, an abnormal water load due to a serious fire, polluted wells, failure of a chlorinator, an interruption in the power supply—just the sort of jobs for which HTH is made to order.

No wonder that so many experienced water works men keep an ample supply of HTH always on hand, not only as an important measure of preparedness for every sort of emergency, but also because they find it so useful in scores of every-day sanitation jobs! Write or wire us for full information and nearest available stock.

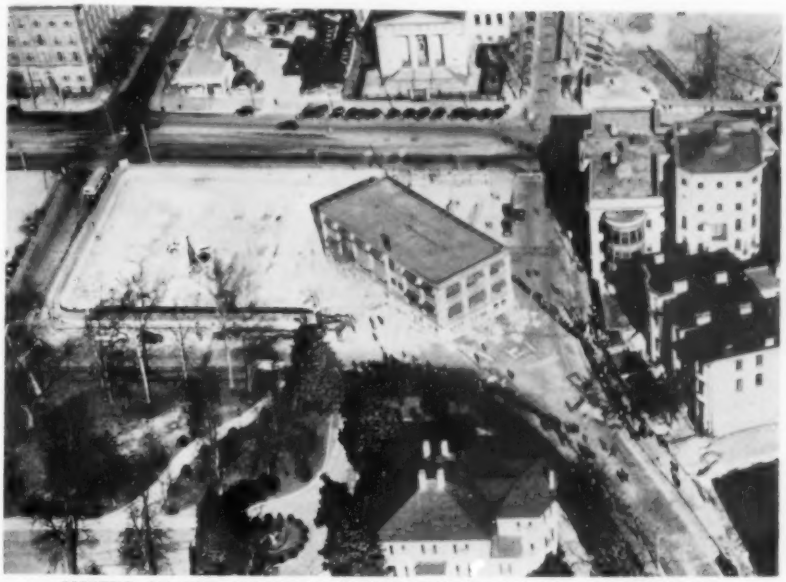
The MATHIESON ALKALI WORKS (Inc.), 60 East 42nd St., New York, N. Y.

Liquid Chlorine... HTH and HTH-15... Soda Ash... Caustic Soda... Bleaching Powder... Bicarbonate of Soda
Ammonia, Anhydrous and Aqua... PH-Plus (Fused Alkali)... Solid Carbon Dioxide

BE PREPARED WITH HTH FOR ANY EMERGENCY!

less than renting suitable available space in near-by office buildings or rehabilitating other city-owned buildings conveniently located. And since it was known then that the Broad Street lot would eventually be used for some other purpose, the metal type of structure was chosen because of the ease with which it could be torn down and re-erected, or moved intact a relatively short distance. The wisdom of this foresight is now being proved.

DOUGLAS B. HOBBS.



MOVING OF THE ALL-METAL PUBLIC WORKS BUILDING IN RICHMOND
At left, the building in its new location. At right, the building being moved through the city

Forward-Looking Publicity by Public Utilities

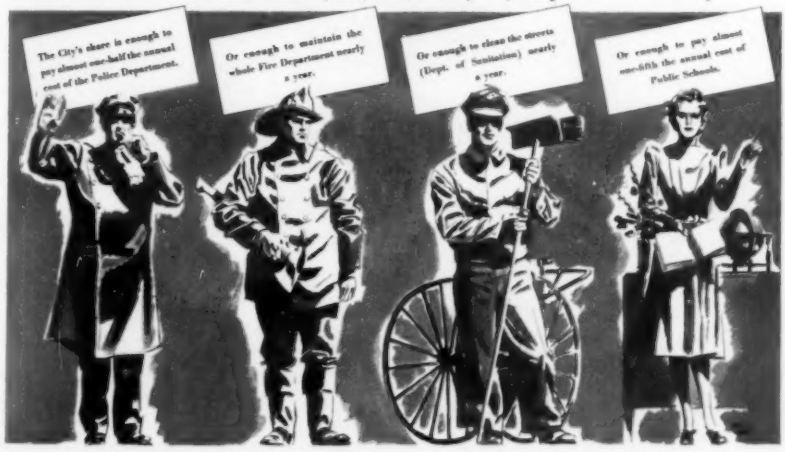
THE Consolidated Edison advertisement here reproduced from *The New York Times* of February 7 typifies a marked departure from the traditional complaints of public utility corporations of "unbearable taxes" alleged to be extracted from widows and orphans and other holders of utility securities. The new type of publicity acknowledges frankly that the tax money comes from the utility's customers, but points out that the consumers as members of the community benefit through the expenditure of these funds by public officials, mainly for essential municipal activities but also for services rendered by the state and Federal governments.

There is the implied or actual suggestion in modern public utility publicity that the amount of taxes currently paid ought to be given careful consideration in any proposal for public ownership which would take the utility off the tax roll. The February 4 issue of the Cleveland Railway Company's leaflet, "All Aboard," for example, points out that "of the $1,197,260 of taxes paid or accrued in 1938 by the company, it is estimated that $711,065 will revert directly to the city of Cleveland," and adds: "We mention this on the theory that anyone would think twice about killing a goose that annually lays a $711,065 egg."

How the Community Benefits from Consolidated Edison's

MILLION-DOLLAR-A-WEEK TAXES

See how New York's share ($29,200,000 a year) helps to run the City


The City's share is enough to pay almost one-half the annual cost of the Police Department.
Or enough to maintain the whole Fire Department nearly a year.
Or enough to clean the streets (Dept. of Sanitation) nearly a year.
Or enough to pay almost one-fifth the annual cost of Public Schools.

STATE, FEDERAL AND OTHER TAXES, TOO!

THE MONEY which your utility companies pay out in taxes comes from the public and goes back to the public to help maintain the essential services of government. It is a substantial part of your regular bill for utility service.

For the year 1938, our taxes were $11,000,000, or nearly $1,000,000 a week ... not including the City Sales Tax on your use of utility service, or your purchase of appliances.

Of this tax bill of $11,000,000, over 52%, or $29,200,000, goes directly to the City of New York. How this great sum contributes to the welfare of the community, you can see from the familiar examples in the illustrations above.*

In the past ten years our taxes have doubled—a 100% increase! In 1928, taxes took 11¢ of every dollar you spent for electricity, gas or steam. In 1937, this figure had risen to 17¢, and in 1938 to more than 21¢.

But despite rising costs, the rates you pay have continued to come down ... and down ... and down. Successive reductions are saving our customers in New York and Westchester about $40,000,000 this year, compared with what they would have paid at 1925 rates for their present use of electricity and gas.

*Based on "The City of New York Budget for 1938"

THE EDISON COMPANIES OF

CONSOLIDATED EDISON

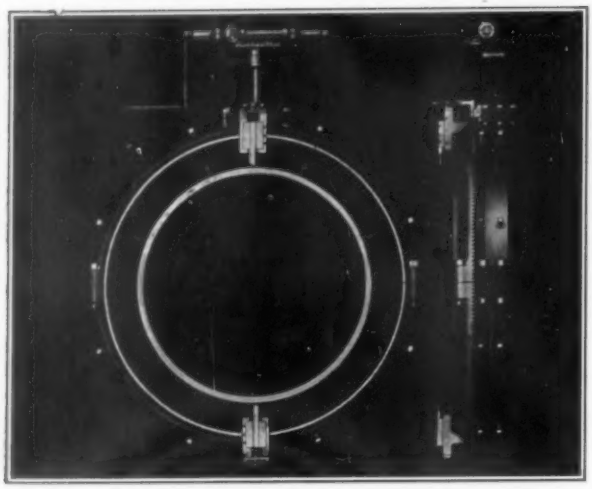
NEW YORK & QUEENS ELECTRIC LIGHT & POWER COMPANY · BROOKLYN EDISON COMPANY, INC. · WESTCHESTER LIGHTING COMPANY
THE YONKERS ELECTRIC LIGHT & POWER COMPANY · NEW YORK STEAM CORPORATION

SERVICE

Ralph Bradford Appointed Secretary of National Chamber

The Chamber of Commerce of the United States announces that at the January 27 meeting of its Board of Directors it was voted that Ralph Bradford, who since October 1 has served as Acting Secretary, be appointed Secretary of the Chamber.

Prior to October 1, Mr. Bradford had served for several years as Manager of the Chamber's Commercial Organization Department.



CUT PIPE QUICKLY, CLEANLY in the trench!

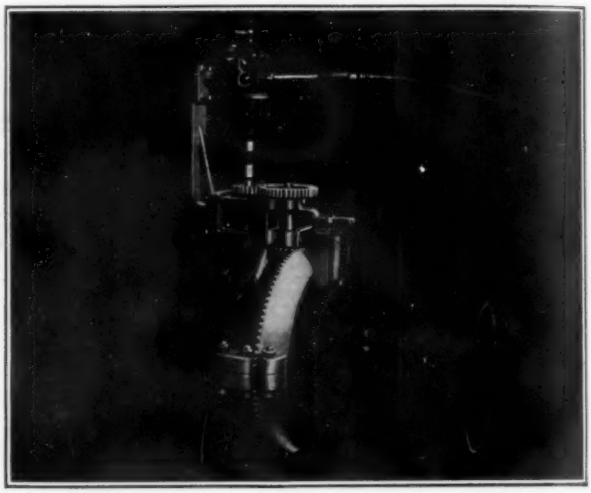
with

SMITH PORTABLE PIPE CUTTING MACHINES

A Symbol of Quality

THE A. P. SMITH MFG. CO. EAST ORANGE, N. J.

Since 1889



These machines are made in both hand and power-operated types and do their jobs cleanly and in less time.

By simply changing the cutting tools, they can be used on either steel or cast iron pipe from 4 in. to 48 in.—all sizes can be equipped for air motor operation.

Smith Portable Pipe Cutting Machines have a world-wide reputation for saving time, labor and costs and pay for themselves over and over again.

Send for special bulletins giving all details.

THE A. P. SMITH MFG. CO., EAST ORANGE, N. J.

7 So. Dearborn St. Chicago, Ill. | 901 Wm. Oliver Bldg. Atlanta, Ga. | 1013 S. Western Life Bldg. Dallas, Texas | 2799 Piedmont Ave. Berkeley, Calif. | 315 N. Crescent St. Flandreau, S. D.

Mention THE AMERICAN CITY—it helps.

Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 60 John St., New York

Paul L. Green, Chairman; George W. Barton, William C. Brandes, Edward H. Eames, Ralph W. Eaton, William G. Eliot, III, James R. Guthrie, Harry C. Koch, E. B. Lefferts, Miller McClintock, William R. McConochie, Theodore W. Matson, Robert A. Mitchell, John B. Moriarty, William A. Van Duzer, Ralph F. Michel

Finance Transit!

Basic Considerations for Mass Transportation Planning in Large Cities

By HARRY C. KOCH
Associate Traffic Engineer, Detroit, Mich.

THE great popularity of the automobile depreciated the utility of the street car, reduced operation from multiple-car units to single-car units, subjected it to interruption by signal lights, changed its operating factor adversely, and has steadily depressed the financial structure of transit.

In the heyday of electric traction, seasonal peaks of riding and revenue occurred during vacation periods, and more frequent peaks occurred during Sundays and holidays. This riding was in addition to that of the regular week-day, requiring no additional physical property. The average daily load was nearly as great as the peak-day demand representing nearly maximum business for a fixed capital investment. There was a rush by private capital for franchises to seek the lucrative business of mass transportation. In New York City, for example, there are over 1,000 franchises held by private transportation companies giving them the right to operate upon public property.

This has all been changed. The direction of movement on holidays is reversed. The automobile reduced these peaks to valleys, destroyed the equality of average day and peak day loads and the profitable relationship between invested capital and traffic.

Transit Problem

All of this development has brought forth the necessity of solving a problem of providing efficiently and satisfactorily for future transportation needs of large communities under the most adverse conditions of operation. Part of the additional cost of providing adequately for business-day transportation under less favorable operating conditions must be charged to the broader scope and changed habits of living which have been afforded by the automobile.

Not Enough Nickels

In spite of these changes, officialdom clings to the old-fashioned theory that the traction company must live on the nickel fares of its customers. Transportation is as vital a civic function as policing, and the trends of the past 20 years justify a greater subsidization of these facilities through community participation in costs.

In a city of 1,500,000 inhabitants, 500,000 automobiles are registered. These automobiles are driven a total of four billion miles, three billion of which are within the confines of the city. The community pays $120,000,000 annually for individual city travel alone, and for travel in mass carriers, which constitutes *necessity* riding, this same community pays $18,000,000, or one-seventh of the total bill for transportation, and wonders why better service is not offered.

These figures do not give the whole story. They are conservative. In addition to the $120,000,000 of costs of rolling stock, this same community pays a large bill for right-of-way, paving, snow removal, traffic control, enforcement, hospitalization, and suffers a loss, difficult to estimate, in annual traffic deaths and disabilities.

Widenings Costly

The collective application of private expenditures for urban transportation has brought with it a changed composition of street traffic with a greater demand for space and consequently a depreciative effect upon all forms of surface transportation, particularly noticeable in reduced speeds. The first thought of planners, therefore, is to provide greater space through grandiose programs for street widenings and municipal parking areas. Careful computations will show, however, that the demand for widening for automobile transit is now, and will continue to be, so great that to supply it means virtual demolition of our crystallized areas, the preservation of which should be one of the primary considerations of the planner. The only real justification for street widening is not added facility for any one type of transportation, but right-of-way for whatever combination of uses is needed to effect the highest utility of the right-of-way so acquired. The demand for widenings has been greatest in those localities where development has been most intensive and abutting property values the highest. Because of this, the most desirable widenings are tremendously expensive and represent an unjustifiable expenditure for added widths created, unless the new right-of-way incorporates provisions for more efficient use of the new widths available. It is therefore obvious that wholesale widenings to "solve" the transportation problem cannot be undertaken. This means that further additions to traffic and transportation facilities must, in most cases, be revised use of existing surfaces or the creation of added facilities vertically.

Elevated Structures Bad

The tendencies throughout the country in urban streets where high values are potentially possible in abutting property is to tear down elevated structures when their traffic loads can be transferred to other levels. There are two conditions under which such replacement is not so urgent. These are where ample width of right-of-way has eliminated the objectionable features of an elevated structure or where high values of abutting property, either existing or potential, are not a factor. Studies have revealed that where structures above the street have been built, damages to abutting property decrease with the width of the street and disappear when the right-of-way measures approximately 150 feet. These conditions practically eliminate any possibility of erecting elevated structures economically and wisely in the business sections of large cities. The restrictions upon the application of this type of utility are not limited to central districts alone but to routes leading to them.

Underground Good

It is to and from the central business districts that the greatest business-day movement of persons takes place. Along the principal routes leading to these districts will be found a combination of a high demand for transportation, and a secondary yet high degree of developed values. Sound planning must include, for central business districts and routes leading to them, facilities to be placed underground, with high passenger capacities.

Underground placement not only eliminates damages to abutting property, but enhances its value in direct proportion to the capacity of such facilities, particularly at points where access is provided. This enhancement occurs because land values are measured in terms of accessibility. The fact that underground service is usually given with trains on time-interval spacing, providing the highest passenger capacities, accounts for the tremendous rise in land values at rapid-transit stations. The highest concentrations of real property wealth in the world are to be found at the stations of train-operated subways.

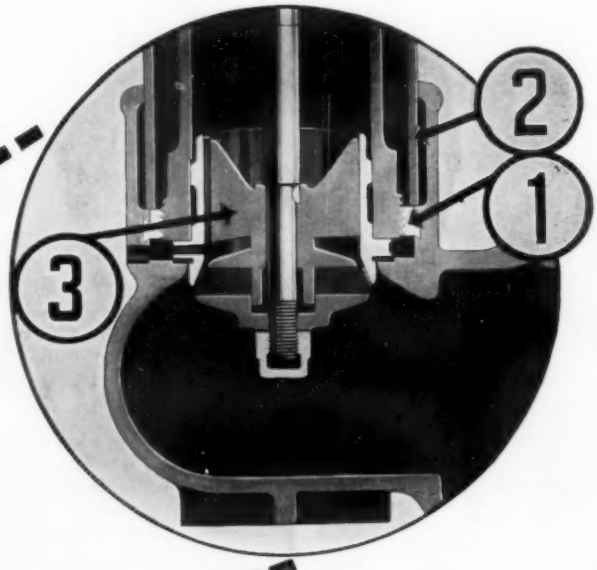
Automobile Traffic

Aside from the consideration of passenger capacities, underground placement practically restricts the use of the structure to electrically propelled equipment.

This underground construction should make you

Specify Mathews Hydrants

Even if Mathews Hydrants should cost more in the first place it would pay you to specify them for the savings in labor, maintenance, and repair. This is because the loose outer protection case of the Mathews Hydrant lets you unscrew and lift out its barrel which contains all operating parts. No digging is ever necessary. A smashed hydrant can be repaired instantly by inserting a new barrel. Periodic inspections and overhauls which include even the main and drain valve seats can be made above ground. Nozzle levels can be raised or lowered without excavating below the finished grade. Steamer nozzles can be added or removed by changing barrels. Specify this frost-proof hydrant that you can "change like a tire." Your city will pay less for its fire protection.



1. The entire barrel unscrews here for removal.
2. The protection case is loose, free to move with frost.
3. A positive and automatic drain valve which can't fail.

MATHEWS HYDRANTS

Made by R. D. WOOD COMPANY

Manufacturers of Sand Spun Pipe (centrifugally cast in sand molds) and R. D. Wood heavy-duty gate valves for water works

400 CHESTNUT STREET, PHILADELPHIA, PA.

Why not remember to mention THE AMERICAN CITY?

Poisonous gases from automotive vehicles require elaborate ventilating systems. The cost of operation per year per mile is $11,000,000. These costs reduced to a passenger-mile basis, clearly show the impracticability of providing this type of facility in any extensive part of the comprehensive city plan. Inherent in the structure itself are many disadvantages, such as the lack of high speed, inadequate passenger capacities, and the limitations upon the number of lanes per structure, as well as the unsatisfactory arrangement of lanes at points of entrance and exit.

These facts require that "limited access" ways for automotive equipment, which may be included in a plan for large urban centers, be of the depressed or elevated type. Certain considerations of type of origin and destination will warrant the inclusion of limited access ways in the trunk-line system. A great dispersion of origin and destination with ample connections, at both areas of accumulation and distribution, with rural trunk lines, justifies the highest type of vehicle ways for through traffic. This theory is the foundation for the participation of Federal aid in trunk lines and interconnections with trunk lines in cities. Too often, however, these trunk lines and their connections traverse already congested sections, and the added traffic load thrown upon the street system of the distribution area aggravates, rather than relieves, the situation. Limited access ways should therefore be considered as a secondary element in the comprehensive plan and should never be constructed into central business districts with the idea of facilitating passenger movement.

Price of Neglecting the Problem

But is a plan for major improvement including high-capacity passenger carriers needed? Large cities always discuss one or another scheme, but seem to fail to recognize the economic effects of not having improved facilities, and conveniently dispose of the problem with acknowledgment of the utter impossibility of financing the enterprise. In the meantime, the forces of decay work quietly and unnoticed.

Much has been said about decentralization. It is the belief of some planners that decentralization is a healthy and desirable transfiguration. On the other hand, studies of the cold facts of economic significance show community losses which dwarf the annual deficit of local transportation companies. Depreciation of taxable values in the central business district, a decrease in numbers of shoppers to the area, and an exodus of residents and factories from the city, mean increased cost of conducting the commerce of the community. Increasing tax rates are, inevitably, a consequence.

Something Better?

Let us explore further into what the transportation plan must include. The conservatives say: "We know that automobiles occupy too much street space, but people want to drive their automobiles and we can't make them ride our cars." This is a sound contention, because any new facility, to be effectively patronized, must offer advantages over existing facilities. Outstanding among these is speed. To obtain highest speed with mass carriers is not as much a matter of motive power as of the spacing of stops and the provision of an exclusive right-of-way with pre-pay arrangements at stations. Regardless of the ability of the motors to accelerate rapidly and of the braking mechanism to decelerate, the top limits of these functions are set by the requirements of the comfort of standees—as the necessary flexibility of loading of mass carriers must provide for standees during rush periods. It is necessary, therefore, in order to obtain a maximum advantage in providing rapid transit, to study origins and destinations and to include as many as possible of the features of express service.

Fixed Structures Attract

Flexibility of routing cannot be listed as an advantage of train-operated subways from a service point of view over other forms of transit. There is, however, an economic advantage in the very lack of this quality. Land enhanced in value can be made productive only through its development. Improvements are costly and their financial success is dependent on the permanency of the elements which contribute to its value. Development and people are attracted to new trunk-line routes as iron filings to a magnet; in part, because of the fixity of structure.

Facilitate Transfer

Other forms of transportation must be coordinated with the trunk lines to provide feeders to the high-capacity lines. Among them, the bus is the most adaptable. Transfer from feeder to trunk line should be provided at platform level to eliminate the need of crossing traffic streams and to simplify the mechanics of fare collection. Parking facilities for automobiles should be provided at outlying stations for the convenience of suburban passengers. The detailed arrangement of the means of transfer will in great measure affect the ease with which transfers are made and, consequently, the extent to which the coordinated facilities will be used.

Flexibility of schedule is an advantage possessed by underground trains over any other type of urban transit. Sound planning of routes will insure sufficient density of riding to permit headways within five minutes during the business hours of the day even if trains are cut to single-car units to maintain such headways. No conditions of temperature, snow, ice, sleet or rain, can affect the regularity of operation.

A comprehensive system of underground trunk lines, coordinated buses, street cars and terminal facilities for automobiles is not a lucrative field for the participation of private capital. The cost is high and the fare must be kept within the reach of the poor. In large municipalities considerable proportions of the population do not own automobiles, because they cannot afford them and, by the same token, they cannot pay high fares for their rides to and from work. In no instance, therefore, should the tax for a ride or combination of rides exceed 10 cents. While an occasional transit line may be constructed and paid for from fares through a long-time amortization period, in general these facilities are not self-liquidating from income alone. The present-day composition of traffic has advanced the need for high-speed lines through areas not readily capable of supporting such facilities from fares only.

Good Transit Benefits City

But is the purpose of improved transportation solely that of supplying fast rides for workmen and shoppers? Certainly not. The building of a trunk line is like the creation of several additional streets. Abutting property is benefited as a result, because its frontage is multiplied. Other property in the vicinity of stations is enhanced in value owing to greater accessibility. The downtown business district is benefited because values here are saved from decay. There is a community-at-large benefit—center rot is checked. The motorist likewise benefits through the removal from street surfaces of many millions of passenger-miles, clearing traffic ways for greater freedom of movement and safety. These combined groups provide the basis for ample and equitable financing.

The Financing Plan

The problem of financing is one of apportioning total benefits among the beneficiaries: the rider; benefited property; community-at-large; and the motorist.

As the motorist pays for the costs of purchase and operation of his vehicle, so should the car rider supply the funds for purchase and operation of rolling stock. Rolling-stock requirements will vary with riding, as will total revenues. A maximum fare of 10 cents, by this fortunate relationship, is therefore likely to be adequate for any reasonable range of riding density even under the demands of short-time equipment-purchase plans.

With the rolling stock financed out of revenues, there remains the structure to be underwritten by the three remaining beneficiaries. Special assessments have been frowned on. Unfortunate experience with the application of this principle in street widenings has done little to popularize this generally sound method of amortizing civic improvements. The loss of this avenue to accomplishment is not as serious, however, as it may first appear to be. Real values, in whatever way created, find their way to the regular assessment rolls. Tax rates applied to increased valuations provide increased income. The same result is thus accomplished without the application of the notorious special assessment feature. Greater success will therefore be obtained if groups two and three are combined under the community-at-large catagory. A close check of valuations should furnish the basis for close estimates of tax incomes resulting directly from the provision of ample rapid-transit facilities.

Since the acquisition of structures is analogous to the creation of new streets, thereby supplying motorists with greater

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Tests included Exterior Design; Materials, Indicators; Coin Slot Mechanism and Receptacle; Clock Mechanism; Convenience of Operation; Coin and Slug Test; Heat Test-accuracy; Cold Test-accuracy; Water Test; Examination after Test; and General Merit.

The Committee made the following summary recommendations:

"That upon the basis of all demonstrations given, all evidence submitted, all laboratory tests made and all professional discussion, that *Dual* Parking Meter was selected as being *far superior* to all competitors."

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facility, it is not inequitable to apply a portion of gasoline and weight tax moneys, regularly apportioned to the counties, to a program of construction of transit lines. Highway planning traffic studies show that the need for the provision of greater motor-vehicle facility increases as large cities are approached. Is it not logical, therefore, to apply a portion of motor-vehicle tax money to the job of removing local travel from trunklines, in these sections of intense congestion, thus opening these routes to through movement? The matching of state dollars with Federal-aid dollars opens a channel through which Federal subsidy can be made effective on limited sections of United States routes. Because these routes usually form a substantial part of the network of heavy passenger movement, this subsidy may be of material consequence.

It has been the policy of the Federal Government in recent years to extend aid to the heavy industries and public works through the Reconstruction Finance Corporation and the Public Works Administration. Acceptable projects must have certain self-liquidating features. Highly desirable and much-needed transit improvements may not be eligible under these agencies because of the lack of these features. Projects must be within the limits of appropriations, and since transit proposals from large cities must compete with those for schools, water works, sewers, and many others from cities both large and small, this form of financing should not be considered as one of foremost probability.

Private Operation

Transportation is a regional problem. It should be planned and constructed as a community enterprise with community ownership under the guidance and administration of a Regional Transit Board. Once constructed, the system should be operated by a private company under a percentage lease arrangement.

The per-capita cost of providing liberally for transit requirements by the participation of the rider, the community-at-large and the motorist, is small. The dividends in time savings, security of property values, traffic fluidity and safety will be many times greater. Community prosperity depends on transportation.

Improving Municipal Administration

Current Items from the Public Administration Clearing House

Procedure Outlined for Proper Municipal Audits

MUNICIPALITIES can secure proper audits only by reaching a clear understanding with the auditing agency on the scope and type of account examination, according to a study issued February 2 by the National Committee on Municipal Accounting.

The study, which includes recommendations for municipal audit procedure, points out that unless a municipality indicates whether the audit is to be "general"—inclusive of all financial transactions—or "special"—limited to some particular phase of activity such as pension or sinking-funds—the audit will not provide a satisfactory check of financial business. Nor will the audit be considered satisfactory to the public if the independent auditor is too limited in the scope of his work or if his report is "smothered" as soon as it is filed.

Municipal finances today undergo audits by three kinds of agencies. Several states require audits by a state agency. In other cases independent private accountants or independent municipal auditors are the examiners. If an independent private auditor is hired, the study recommends that first consideration be given to the qualifications of the auditor, with preference for certified public accountants. Disapproval is expressed of the practice of awarding contracts for audits on a competitive bid basis.

Whatever auditing agency is used, the study suggests that the auditor be responsible for making specific comments and recommendations on any non-conformity of the municipality's accounting practice with procedure prescribed by local statute or charter. The independent auditor "should also report any failure of the accounting department to make financial reports required or needed for administrative purposes."

In addition to describing the scope and procedure of a general audit and the work in connection with verification, the study outlines the content of the audit report as made up from statement forms recommended by the Committee.

Represented on the National Committee on Municipal Accounting are nearly a dozen professional accounting and governmental organizations. The audit procedure study was directed by F. H. Elwell, Director of the School of Commerce, University of Wisconsin, and T. Coleman Andrews, City Comptroller, Richmond, Va.

City Real Estate Departments Help Solve Tax-Foreclosed Land Problem

FACED with the double loss of tax revenues and depressed property values from large areas of city-owned land acquired through tax delinquency, many cities have established real estate departments to improve their financial conditions, information from the Municipal Finance Officers' Association shows. In Portland, Ore., Milwaukee, Wis., Sacramento, Calif., Boston, Mass., Buffalo and Harrison, N. Y., Vero Beach, Fla., Des Moines, Iowa, and elsewhere, the departments are charged generally with managing and selling unredeemed foreclosed property. The task may include programs to recover delinquent taxes and return land to owners.

Portland's Real Estate Department, since its establishment several years ago, has sold more than 4,150 lots and parcels of land for approximately $2,100,000 and, in its effort to prevent tax foreclosures, has collected nearly $400,000 in back taxes and assisted 700 out of 2,500 delinquent tax accounts to pay up and save owners' properties. Real estate dealers have been paid about $12,000 since 1932 for their part in land transactions.

The Property Sales Division of Sacramento during the last several years has handled more than 800 pieces of property, realizing about $500,000. Vero Beach recently put 75 lots back on the city tax rolls and caused $70,000 to be invested in new buildings through a plan of selling city-owned lots at low prices providing homes were built upon them. Purchasers were allowed to pay with city bonds, and $30,000 in bonds were canceled.

A recent appraisal of 11,070 lots owned by Buffalo and surrounding Erie County evaluated them at $3,697,616. The sale of 70 lots netted the city $44,000 during the last year.

Yonkers, N. Y., through cooperation between its Real Estate Division and city planning commission, has acquired practically all needed sites for schools, parks, playgrounds and nurseries from tax-foreclosed lands.

Milwaukee, which pioneered in the city real estate department field, is also emphasizing a program for sale or rent of city-owned lands. Milwaukee owns more than 6,750 parcels of land, valued at nearly $2,000,000. The city collected $40,000 in rents from 107 tenants in 1935.

Ten New Governmental Research Agencies

TEN new agencies for research in government—five of them state, four municipal and one regional—were established in 1938, the Governmental Research Association reports.

Of the state agencies, two were set up in connection with universities—the Bureau of Public Administration of the University of Alabama, and the Institute of Local and State Governments of the University of Pennsylvania. Two others established were legislative councils, in Connecticut and Illinois. The regional governmental research agency is the Northwest Regional Council, serving the

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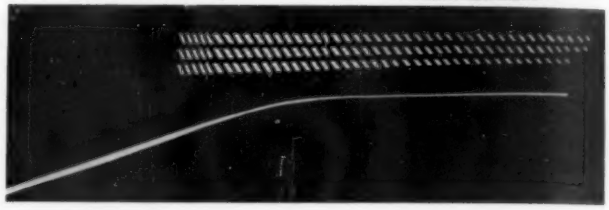

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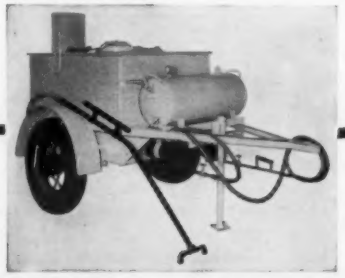

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states of Idaho, Montana, Oregon and Washington. Localities with new research agencies include Hartford, Conn., Newark, N. J., Peoria, Ill., Atlanta, Ga.

A unique plan to band together public administration research agencies within a single state was put into effect during the year in Virginia, where a "Council on Public Administration" was established. One of the Council's chief purposes is to bring the research resources of all the universities and colleges in the state to bear upon problems of state and local government.

Modern Fire-Fighting Methods Create Need for Scientific Recruitment Plan

MODERN fire-fighting methods, characterized by extensive use of machinery and routine, have resulted in a need for scientific programs to select firemen from the best-qualified persons available, says a Public Administration Service study. Although cities wishing to increase the efficiency of their fire departments usually go about it by purchasing improved apparatus and machinery, scientific programs have been developed to select fire department recruits by measuring the qualities which make good firemen.

A modern recruitment program involving five "essential steps" in selecting recruits may be followed by a city desiring to establish its fire-fighting service on a professional career basis. The steps recommended are:

1. An active search for the best-qualified persons available for the fire-fighting job, and encouragement for them to compete for appointment.
2. Rejection, without examination, of candidates who clearly fail to meet established standards of age, physical condition and schooling.
3. Testing candidates who meet these minimum standards for intelligence, aptitude and skill.
4. Investigation of the character of candidates by asking for information from former employers and others familiar with their records and ability as to their employment and training, history, integrity and general reputation.
5. Provisions for a probationary or working test period as a final check of the recruit's fitness for the fire-fighter's job before permanent appointment.

Many cities have adequate machinery for handling such a recruitment program in a civil service or central personnel agency. Where such an agency exists, its services should be utilized in order to avoid duplication and to get the benefit of service of trained personnel technicians, even if civil service has not been formally extended to cover the fire service.

Failure to use scientific methods in effort to raise fire department personnel standards has been due in the past to a lack of successful devices for measuring qualities which make good firemen, it is pointed out. Now municipal authorities are emphasizing that advantage may be taken of new testing methods.

English "Garden City" Developments Show High Health Rating

LOWER mortality and disease rates among Great Britain's low-income families housed in garden city housing projects as compared with the national average are noted by the National Association of Housing Officials.

Studies of several British housing developments, including Letchworth and Welwyn, garden cities owned privately by corporations, and Wythenshawe, a satellite to Manchester owned by the city government, showed that the project with the highest death rate had 4 per cent fewer deaths than the national average. The highest garden city mortality rate was also 9 per cent lower than that in crowded industrial sections of the larger cities.

The study showed similar comparisons in disease rates. Such diseases as tuberculosis, measles, influenza, and pneumonia were less frequent in the garden city developments than the average for the entire country.

Tax Instalments Popular Payment Plan in 75 Per Cent of Cities

LESS than one-fourth of the larger cities in the United States now require payment of local property taxes in one lump sum, information from the Municipal Finance Officers' Association shows. Semi-annual collections are the most frequent plan of payment, approximately one-half the cities of more than 30,000 population gathering their taxes in two instalments. A substantial number are collecting in three or four instalments, while 16 permit payment in 10 or 12. Among Canadian cities of comparable size 7 of 18 cities still collect in one instalment, while the rest are pretty evenly distributed among collections in two, three, four and five payments.

The trend toward payment of taxes in several instalments has been continuous during the past eight or nine years, according to the Association, and was directly promoted by the depression. In 1931, for example, only one city in a reporting group of 300 permitted quarterly payments. By 1934 the number had increased to 29, and in 1938 approximately 50 cities followed the practice.

Wichita Police Follow Public Service Careers

PROMOTION of twelve members of the Wichita, Kans., Police Department during the past three years marks this Mid-Western city as outstanding in its provision of a career service for law-enforcement employees, the International City Managers' Association reports. During an average service of 5½ years in Wichita, three of the twelve officers reached the rank of personnel director, two became captains, and two lieutenants. The remaining five attained respective positions as polygraph or "lie detector" operator, accident investigator, desk sergeant, turnkey and fingerprint clerk.

All twelve officers have since moved on to positions in other cities, two of them becoming police chiefs.

Rochester Acquaints Citizens with City Radio Broadcasts

ROCHESTER, N. Y., citizens are getting better acquainted with local government affairs through a new weekly radio program, "A Day at City Hall," the International City Managers' Association reports. The weekly 15-minute broadcasts, from a local radio station, are arranged to come directly from the City Hall desks of officials. They are informal, with various officials answering questions frequently asked by citizens.

At the end of the year City Manager Harold W. Baker made his annual report to citizens for the first time via the air. Listeners during a recent blizzard heard how city maintenance gangs were handling the snow removal.

The local board of education has requested that the programs be recorded for use in the social science classes of the public schools.

The Municipal Bond Market

Recent sales of new issues from February numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$1,340,000	Rochester, N. Y., General Revenue	.75	1-4 Ser.	.73
650,000	San Francisco, Calif., Airport	1.70	1-10 Ser.	1.6472
1,300,000	St. Louis, Mo., Public Buildings and Improvements	?	16.85 Avg.	1.82
392,000	Norwich, Conn., Gas and Electric	2	11.25 Avg.	1.87
125,000	Norwalk, Conn., Incinerator	2	10.75 Avg.	1.91
1,810,000	Minneapolis, Minn., Public and Work Relief	2	1-10 Ser.	1.97
100,000	Marinette, Wis., Emergency Relief Replacement	3	2-11 Ser.	2.08
500,000	Portland, Me., Water District	2.25	20	2.15
150,000	New Kensington, Pa., City	2.25	6-15 Ser.	2.21
195,000	Alexandria, Va., Public Improvement and Funding	3	18.33 Avg.	2.61
165,000	Selma, Ala., High School	3	17.5 Avg.	2.99
214,000	St. Petersburg, Fla., Gas Plant Revenue Certificates	4	?-11.33 O.-A.	3.68
875,000	Little Rock, Ark., Sewer Revenue	4	15.86 Avg.	3.71
178,000	Moundsville, W. Va., Paving	4	5.85 Avg.	5.65

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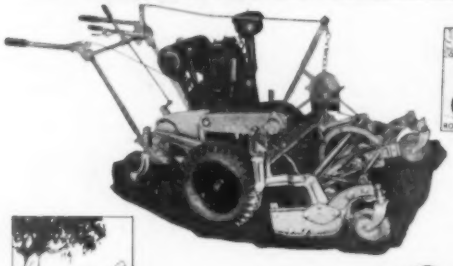

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The Ideal Caretaker may be obtained in separate units, or as a complete assembly of year-around, all-purpose equipment. Wherever grounds-care presents a problem, the Caretaker will provide an economical answer. The new catalog gives complete information—write for it today—there is no obligation.

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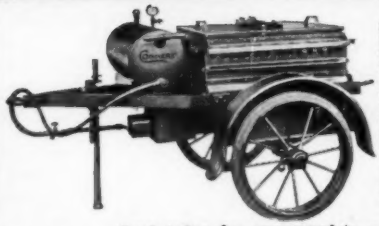

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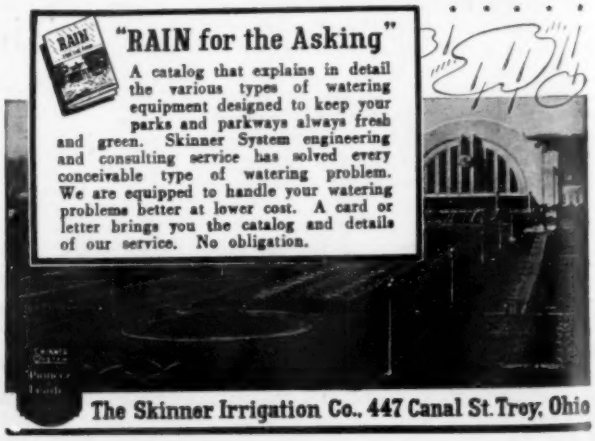

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Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

Zoning and Planning Notes

With the cooperation of
EDWARD M. BASSETT
Author of "Zoning" and of "The Master Plan"

Police Power — Conflict Between Local Ordinance and State Statute

FLORIDA.—*Texas Co. v. City of Tampa*, 100 Fed. 2d, 347 (U. S. Circuit Court of Appeals, Fifth Circuit, December 15, 1939).—The Texas Co., owner of two lots in the city of Tampa in "Bayshore Boulevard," residential and scenic in character, is seeking to erect a filling station on them. Two city ordinances forbid such building in this area, and the state of Florida has also passed an Act prohibiting such structures there. Held (among other things) that the state Act is valid, not being arbitrary or unreasonable, or unjustly discriminatory; and that the Act supersedes the local ordinances, the validity of which it is not necessary to discuss.

EDITOR'S NOTE.—It is evident that a state law, if it shows an intent so to do (in the absence of "home rule" constitutional provisions) will transcend local ordinances; and that under our national Constitution, a United States law with regard to a matter of national concern will prevail over a law of a state. See in this connection our Notes for April, 1938, page 133.

Zoning Ordinance—Planning Commission — Variance for Unnecessary Hardship—Protest by Property Owners

NEW YORK.—*McCabe v. City of New York*, Supreme Court, Kings County, reported in *New York Law Journal*, February 7, 1939, page 614. McCabe is the owner of real estate in the city of New York. Under the city charter the Board of Estimate, the legislative body of the city in zoning matters, has adopted zoning regulations for the city, and the Mayor has appointed a Planning Commission. The Commission may, after a hearing, with notice adopt a resolution changing the zoning regulations. This resolution must be filed with the Board of Estimate within five days, and unless it is modified or disapproved of by a three-fourths vote of the Board of Estimate within 30 days of its filing, it shall take effect; except that if within the 30 days there is a protest of "the owners of 20 per cent or more of the area of the land included in such proposed change" or of the owner of a similar area of certain specified neighboring lands, the resolution shall not take effect unless approved by a unanimous vote of the Board of Estimate. The charter does not state specifically where this protest shall be filed.

In this case the Planning Commission adopted a resolution changing the zoning regulations of the district in which McCabe's land was situated, and filed it within the required five days, with the Board of Estimate. Thereupon within the required thirty days, a 20 per cent protest was filed with the Board of Estimate by the owners of real estate within the district. The Board voted to adopt the resolution of the Planning Commission by a majority vote, but not by a unanimous vote. The question at issue is whether the protest should have been filed with the Planning Commission, or whether it was properly filed with the Board of Estimate. McCabe claims that it was properly filed with the Board of Estimate, and that therefore the change in regulation, not having been adopted by a unanimous vote of the Board, was not validly made.

To this claim of the plaintiff, the city pleads two defenses, the first of which is that the plaintiff has an adequate remedy at law, and therefore cannot ask this Court to pass upon validity of the change. The city says that the plaintiff may file the plans for the building he desires to erect under the old zoning regulations for the district, ask for a permit, and, if it is desired on account of change in regulations, he may go to the Board of Standards and Appeals for a variance on account of undue hardship, and if the decision of the Board is against him he may appeal from the finding of the Board to the Court for a review. "The fact that the remedy may be awkward and debating," the Commission asserts, "is immaterial." This defense this Court overrules. Relief by variance is from a *validly* enacted zoning regulation, and if, as in this action, the plaintiff maintains that the amendment is invalid (as he does because he claims that it was not properly adopted), he is entitled to a decision by this Court on that claim. On this point, the Court states that it is amply sustained by judicial precedent, citing the well-known case of *Dowsay v. Village of Kensington*, 257 N. Y. 221.

The second defense of the city is that the amendment was validly adopted by the Board of Estimate because the protest was filed with the Board and should have been lodged with the Planning Commission. This claim of the defense the Court also overrules. Section 200 of the city charter does not state specifically where the protest should be filed, but a study of this section shows that the place of filing properly is with the Board of Estimate. A construction of the various provisions relating to planning in the charter reveals that it is the duty of the Planning Commission to formulate and propose. Its function is that of an advisory body. It does not command, it merely recommends. Its action is not affected by the protest, while that of the Board of Estimate is very definitely affected; therefore it seems clear that the protest should be lodged not where it would be nugatory, but where it is effective. It should also be observed that there is no provision in the law compelling the Planning Commission to transmit the protest, if made, to the Board of Estimate; it is only if the protest must be filed with them that they, the body affected, can be certain to know of it.

The protest therefore was, in the opinion of the Court, properly filed with the Board of Estimate, and the amendment changing the regulation of the district in which the plaintiff's property was situated, not having received the unanimous vote of the Board of Estimate, was not validly adopted.

EDITOR'S NOTE.—The importance of this decision is in its delimitation of the respective fields of action of the Planning Commission, an appointive body and the legislative body of the city, elected by the people. The function of the Planning Commission is to advise. Its advice must be considered, and cannot be disregarded lightly. The function of the legislative body is to decide; they were elected by the people for this purpose and by them will be held responsible for their action.

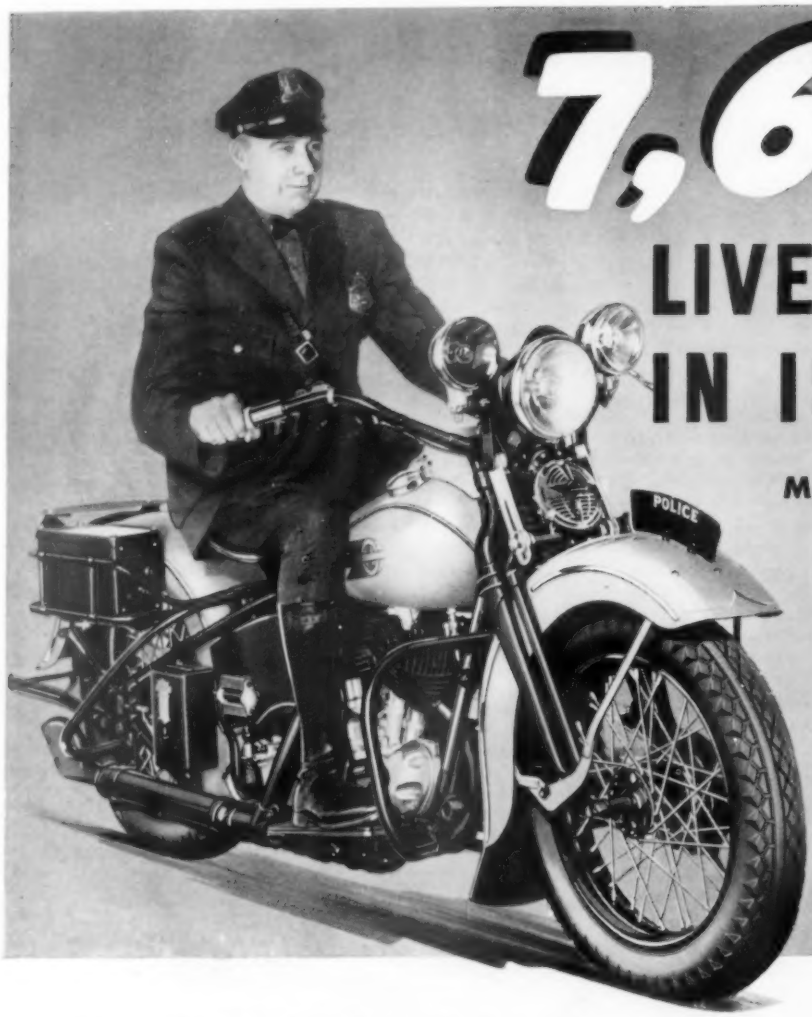
Public Housing—Slum Clearance

SOUTH CAROLINA.—*McNulty v. Owens, Mayor of City of Columbia*, 199 S. E. 425 (Supreme Court, October 13, 1938).—Where the existence of slum areas in a city endangered health and morals, and the inhabitants of these areas were unable financially to supply other housing, a slum clearance and low-cost housing project which was planned by the Housing Authority and the city constituted a proper governmental function for a valid public purpose within the constitution of the state exempting from taxation property used for a public purpose, and the Housing Authority could use the state power of eminent domain to acquire real estate therefore. Bonds issued for this purpose by the Authority do not constitute a part of the bonded indebtedness of the city. The city could donate land and money for the project as a public purpose.

EDITOR'S NOTE.—For similar cases in other states, see these Notes for September, October and November, 1938.

How "Fee" and "Easement" Highways Differ

An important Pennsylvania court decision, explaining the legal distinction between "fee" and "easement" highways and the rights of abutting owners as to access and other uses was reported on page 91 of the February issue of this magazine.



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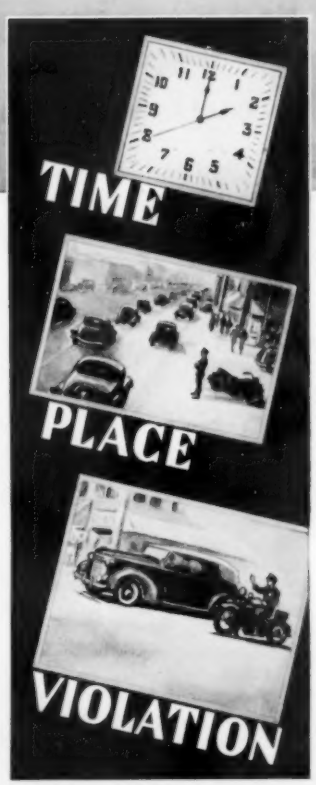

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HARLEY-DAVIDSON
THE POLICE MOTORCYCLE

Court Decisions Affecting Municipalities

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City held not liable for injury to WPA worker while riding on city truck hauling pipe to city water plant, due to insufficiency of truck to hold pipe in place; city being under no duty to him other than not knowingly to furnish an inherently defective truck (Texas Court of Civil Appeals: *Pittman v. City of Wichita Falls*, 120 S. W. 2d, 847).

County held not liable for injury in an explosion to boy who threw match into empty asphalt barrel negligently left uncovered by WPA workers on road repair job (Tennessee Court of Appeals: *Campbell County v. Ridenour*, 120 S. W. 2d, 1000).

City held liable for injuries caused by negligent performance of blasting operations on WPA street improvement project (Minnesota Supreme Court: *Hughes v. City of Duluth*, 281 N. W. 871).

City held liable for injury to motorist due to collision between car and load of poles left in street in nighttime without warning signal, where city had notice of obstruction about two hours before the accident (Nevada Supreme Court: *City of Las Vegas v. Schulz*, 83 Pac. 2d, 1040).

That city had negligently permitted a "Stop" sign at a street intersection to become obscure or invisible through wear held not to render city liable for death of a motorist where the car was driven into a "through" street without stopping and collided with another cars, although the driver did not know that a stop was required (Oklahoma Supreme Court: *Kirk v. City of Muskogee*, 83 Pac. 2d, 594).

City held liable for injury to pedestrian who stepped into grass-covered post-hole in parkway between sidewalk and curb (Georgia Court of Appeals: *City of Rome v. Hanson*, 199 S. E. 329).

Airports

City held not empowered to lease airport ground for producing oil (Texas Court of Civil Appeals: *Moore v. Gordon*, 122 S. W. 2d, 239).

Attorneys

City held empowered to employ special legal counsel to bring or defend suits and to fix his compensation, and to pay special attorney 20 per cent of delinquent taxes recovered by him (Texas Court of Civil Appeals: *Collum v. City of Richardson*, 121 S. W. 2d, 423).

Bond Issues

Statute authorizing bond issues for public levees, etc., held to authorize bonds for wholesale terminal fruit and vegetable market payable out of market revenues (Kansas Supreme Court: *State v. Kansas City*, 84 Pac. 2d, 409).

Proposal submitted to electors to issue bonds for different projects held required to specify amount proposed for each project (West Virginia Supreme Court of Appeals: *State v. Meadows*, 199 S. E. 883).

Holders of bonds and warrants held necessary parties defendant to taxpayer's suit to cancel same (Texas Supreme Court: *Lowe v. City of Del Rio*, 122 S. W. 2d, 191).

Bonds held not invalidated by non-compliance with requirements of unconstitutional statute prescribing manner of submitting to electorate question whether bonds should issue (Kentucky Court of Appeals: *Booth v. City of Owensboro*, 122 S. W. 2d, 118).

City Managership

City commissioners held empowered to appoint acting manager pending suspension of manager, and manager held removable for over-spending budgets, increasing floating debt and failing to transfer sinking-funds to city depository (Kentucky Court of Appeals: *Rawlings v. City of Newport*, 121 S. W. 2d, 10).

Contracts

Taxpayer held not empowered to sue on behalf of city to recover from councilman amount paid by city to company for services, the councilman being one of the owners of the company; under a statute the commonwealth being the proper party to sue to redress any wrong committed (Virginia Supreme Court of Appeals: *Sauer v. Monroe*, 199 S. E. 487).

Licenses

License fees imposed upon operators of trucks in interstate commerce held invalid as attempting to provide revenue for street maintenance rather than for the cost of reasonable regulation of such traffic in the interest of public safety, etc. (South Carolina Supreme Court: *Southern Fruit Co. v. Porter*, 199 S. E. 537).

Tampa ordinance imposing higher license fees against itinerants conducting fire sales than against non-itinerants upheld as a valid exercise of the city's police and taxing powers (Florida Supreme Court: State v. Woodruff, 184 So. 81).

One to whom off-sale liquor license had been refused by city held not entitled to sue to compel issuance of license and to enjoin prosecution for selling without a license, in view of remedy provided by statute for appeal from orders of the local authorities (Kentucky Court of Appeals: *Martin v. Board of Council of City of Danville*, 120 S. W. 2d, 761).

Municipal Classification

Statute requiring villages of more than 5,000 population to comply with requirements concerning firemen's and policemen's pensions held not to violate constitutional provisions for uniformity of legislation respecting municipalities, for home-rule charters, etc. (Wisconsin Supreme Court: *Barth v. Village of Shorewood*, 282 N. W. 89).

Police Measures

Ordinance prohibiting possession of any device whereby money may be won or lost, without regard to actual use for gambling purposes, upheld (Wisconsin Supreme Court: *Dallmann v. Kluchesky*, 282 N. W. 9).

Poor Relief

Statute empowering State Industrial Commission to determine controversies between counties and municipalities concerning liability for relief of poor persons held constitutional (Wisconsin Supreme Court: *Town of Grand Chute v. Milwaukee County*, 282 N. W. 127). But the Commission has jurisdiction only over a proceeding instituted by a county, and not over one instituted by a city or other municipality (same Court: *Town of Greenbush v. City of Plymouth*, 282 N. W. 126). See, also, *Town of Holland v. Village of Cedar Grove*, 282 N. W. 111, for decisions by the same Court on other points concerning adjustment of liability for poor relief under the Wisconsin statutes.

Public Markets

A citizen and taxpayer's suit to enjoin a city from operating a wholesale produce market, as distinguished from a retail market, held not maintainable, for lack of interest different from that of other citizens (Kansas Supreme Court: *Douglas v. City of Wichita*, 83 Pac. 2d, 657).

Public Utilities

Town held not precluded from enforcing 20-year limitation on right of light and power company to occupy streets, etc., because after period expired the company's successor spent money on its plant, etc. (Delaware Court of Chancery: *Town of Seaford v. Eastern Shore Public Service Co.*, 2 Atl. 2d, 258, affirmed by Delaware Supreme Court, *Eastern Shore Public Service Co. v. Town of Seaford*, 2 Atl. 2d, 265).

Relief Funds

Policeman, who died of heart attack within ten minutes after having shot an offender who had a gun, held not "killed" in the performance of official duty in such sense as to entitle his dependents to a statutory relief benefit (Arkansas Supreme Court: *City of Fort Smith v. Hairston*, 120 S. W. 2d, 689).

Salaries

Under charter provisions, failure of governing body to appropriate sufficient funds to pay civil service employees or to vote reductions held to leave city liable for full amount of salaries fixed by ordinance (Massachusetts Supreme Judicial Court: *Fortin v. Chicopee*, 17 N. E. 2d, 441).

Slum Clearance

South Carolina statute providing for slum clearance under contract between city and Housing Authority upheld as serving "public purposes" (South Carolina Supreme Court: *McNulty v. Owens*, 199 S. E. 425).

Special Assessments

Where more land was condemned for street purposes than was to be presently used, held that no special assessment could be levied against adjacent lots for a street improvement that left a surplus strip between the street as improved and such lots (Michigan Supreme Court: *Armstrong v. City of Detroit*, 282 N. W. 147).

Under statute permitting special assessments for essential or special services, ordinance assessing cost of fire protection against owners of property in proportion to value thereof upheld (West Virginia Supreme Court of Appeals: *McCoy v. City of Sisterswille*, 199 S. E. 260).

Prospect that land might be platted in future held to bear on present value of land for special assessment purposes but not to justify assessment on basis of value if land had been platted (Iowa Supreme Court: *Nash v. City of Ames*, 282 N. W. 340).

Streets

Land held to have become part of street through seven years' public use, making wrongful the erection of a private wall on such land (Arkansas Supreme Court: *Engler v. Incorporated Town of Mountainburg*, 120 S. W. 2d, 570).

City held not liable to abutting property owners for damage resulting from State Highway Department's construction of viaduct within city limits (Texas Court of Civil Appeals: *City of Weatherford v. Martin*, 120 S. W. 2d, 618).

Taxation

City's remedy against county board's reduction of tax rate levied by city held, not by mandamus against board to restore original levy, but by application to State Tax Commission (Nevada Supreme Court: *State v. Clark County*, 83 Pac. 2d, 1050).

Water works held owned by city and so exempt from taxation, under constitutional provision, although property was subject to lien for payment of bonds and was operated by special board of trustees (Texas Court of Civil Appeals: *San Antonio Independent School District v. Water Works Board of Trustees*, 120 S. W. 2d, 861).

Tax liens against privately owned property held to have ceased when city acquired the property for public use (Mississippi Supreme Court: *Davis v. City of Biloxi*, 184 So. 76).

Contract to pay tax ferret share of back taxes collected by municipality through his efforts held void for want of implied or express power to make the contract (Mississippi Supreme Court: *Fitzgerald v. Town of Magnolia*, 184 So. 59.

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Municipal and Civic Publications

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Sewage Disposal

Modern Sewage Disposal.—Edited by Langdon Pearse. Anniversary Book of the Federation of Sewage Works Associations, New York. 1938. *X + 371 pp.* $2.50.

The Federation of Sewage Works Associations has taken a novel way of celebrating its Tenth Anniversary, through the publication of this valuable contribution to sewage-works literature as a substitute for a convention. Outstanding engineers and operating men have contributed informative texts on sewage treatment, sewage research and historical phases of the art, as well as on the situation on other continents. The concluding chapters are devoted to the industrial wastes problem and its solution.

It is gratifying to note that the volume has been prepared to be of exceptional value not only to the more technical reader, but also to the layman who seeks helpful information in meeting his municipal problems in the disposal of used water. "Modern Sewage Disposal" is recommended for every municipal and city library, as well as for every sewage-treatment plant reference library and for all practicing engineers.

Public Utilities

Cases on Public Utility Regulation.—By Irston R. Barnes. F. S. Crofts & Co., New York. 1938. *xx + 984 pp.* $7.00 *from* THE AMERICAN CITY.

An excellent selection of cases is contained in this volume, including decisions of various courts and commissions from a century ago to early 1938. The more important classic cases are here, and many others that illustrate the several topics under which the book is arranged; there are 162 cases in all—not given in full length but, in general, in ample extent nevertheless. Each topic is introduced by the author-editor, who has taught utility regulation at Yale for a number of years; and the various chapters conclude with questions and lists of suggested readings.

More cross-references in the text and index, particularly as to citations and related cases, would have been helpful; and different opinions can, of course, be held as to the detailed grouping of cases; but the collection is representative and well presented; is reasonably compact for its wide scope; and is in convenient form for those interested in the control of public utility rates, finances and practices.

H. M. OLMSTED.

Planning and Industry

A paper, "State Planning in Relation to Agricultural and Industrial Development," was presented to the American Railway Development Association, at St. Louis, Missouri, on December 1, 1938, by Earl O. Mills, Regional Planning Counselor of the National Resources Committee. It gives a broad and concise definition of the purposes and functions of state planning, and its importance to any sound future development of industry and agriculture; as well as an outline of the whole national development out of which state planning has grown. Past abuses of land uses, and present need to plan land use in relation to suitability and population trends, are analyzed. Progress that has been made by state planning in the fields of land use, water resources, public works, and transportation are briefly sketched. 29 pp. (Apply to the National Resources Committee, Interior Bldg., Washington, D. C.)

Recreation

Volume III of the extensive Chicago Recreational Survey covers "Private Recreation"; the first two volumes treating the subjects of "Public Recreation" and "Commercial Recreation." The fourth volume will deal with "Recommendations of the Commission." "Private Recreation" covers the recreational activities in Chicago of settlement houses and agencies; national boys' and girls' agencies in Chicago; fraternal and social clubs; athletic organizations; art, music, literature and drama; industrial and trade union recreation. 167 pp. with maps. $1. (Apply to Municipal Reference Library, Room 1005, City Hall, Chicago, Ill.)

Water Supply

Water Supply Engineering.—By Harold G. Babbitt, Professor of Sanitary Engineering, and James J. Dolan, Professor of Civil Engineering, University of Illinois. 3rd Edition. McGraw-Hill Book Co., New York, 1939. *XXIV + 690 pp. Illustrated.* $6.00 *from* THE AMERICAN CITY.

This third edition of an excellent book originally published in 1929 keeps pace with the many improvements in design and purification and operation methods. Unusually well illustrated and with many tables and formulae, it will continue to be a standard reference volume for water-works officials and superintendents, and a leading textbook for sanitary engineering students.

Political Economy

Next Step Forward.—By Donald Slesinger. Based on studies made by The Twentieth Century Fund. The National Home Library Foundation, Washington, D. C. 1938. *143 pp.* 25c.

This simply written little handbook, the beginning of a series, is a popular interpretation and summary of published studies of the Twentieth Century Fund on four vital national problems which concern the average citizen—(1) Your Taxes, (2) Old-Age Security, (3) Government Debt and Credit, and (4) Big Business Profits. The original studies were in each case prepared by committees chosen to represent every viewpoint on the particular subject. Not only are the facts about each question presented, but a definite plan of action for the immediate present is proposed.

Public Works

Although the problem of the advance planning of public works with a view to diminishing economic fluctuations has been a concern of the International Labour Office since 1919, it was not until July, 1938, that the International Public Works Committee, appointed by the Governing Body of the above organization, held its first meeting. A pamphlet, "Public Works as a Factor in Economic Stability," contains the "uniform plan for the supply of information concerning public works" adopted by the Committee at this meeting. It outlines also the principles and policy on which this action is based: principles for the national planning of public works, including some examples showing how these principles are already applied in certain countries; and principles for international action on this matter. The constitution and duties of the Committee are explained. 33 pp. (Apply to International Labour Office, Geneva, Switzerland.)

Democracy in Government

"Calling America"—"The challenge to democracy reaches over here,"—is the special February issue of the *Survey Graphic* devoted to the present vital question of whether and how democracy can survive increasing totalitarianism. Articles are written by prominent journalists, social and political scientists, educators, historians. The three parts deal with: I—an analysis of what has happened abroad to countries under the totalitarian governments, particularly to racial, national, religious, political, and other minorities; II—"Tests of Democracy at Home," an inquiry into how minorities fare in this country; and III—a further broad analysis of the status and workings of democracy here, including a symposium by 32 Americans on what we can do to preserve and revitalize democrary.

As Raymond Gram Swing, the editor of the issue, says in the opening article: "It may be a round-about way to reassure an American in his dread of Germany to tell him to be a better American in his home town. But it is the hardest kind of sober realism. The incitement to democracy by and for Americans is quite as much part of national defense as a building program for the navy and air force." If the successful functioning of democracy in a nation depends on the proper functioning of democracy in its units, the municipalities, then the city has a vital interest in the problems discussed in this issue. 192 pp. 50c. (Apply to Survey Graphic, 112 E. 19th St., New York.)

Government and Administration

Illustrative Materials in Municipal Government and Administration.—By Charles Kneier, Associate Professor of Political Science, University of Illinois. Harper and Brothers. 1939. *xix + 632.* $3.50 *from* THE AMERICAN CITY.

This book includes much of the material with which public officials actually deal—constitutional provisions, state laws, charters, municipal ordinances; and excerpts from articles and talks by specialists in the field of government and administration, giving their views on various phases of this field. Because of the importance of the constitutionality of any solution to practical problems in government, many court decisions have been included in the volume. The arrangement of the material makes for easy reference.

The table of contents is as follows: I—Government: Creation and Legal Status of Municipal Corporations; Municipal Home Rule; Administrative Supervision and Control over Cities; Urban Representation in State Legislatures; Municipal Liability; The Municipal Electorate; Registration and Elections; Forms of City Government; Popular Control over City Government. II—Administration: Administrative Organization; Municipal Employees; Municipal Expenditures; Municipal Revenues; Municipal Debts; City Planning, Zoning; Housing; Health and Sanitation; Law Enforcement in Cities; Fire Prevention and Protection; Regulation of Public Utilities; Municipal Ownership.

City Government

City Government—The Johannesburg Experiment.—By John P. R. Maud. Oxford University Press, New York. 1938. *xiv + 412 pp., including Appendixes, Bibliography and Index.* $7.00 *from* THE AMERICAN CITY.

The study of the government of the city of Johannesburg, South Africa, has peculiar interest because of that government's relative independence as contrasted with that of most other cities, and because of its spectacular and rapid development —sharply contrasted in form before and after 1900. The main purpose of this interesting book, however, is not so much a discussion of the unusual features of this city as an analysis of the philosophy and problems of city government in other parts of the world as related to Johannesburg's municipal experience. Says the author in the Preface, "My theme is city government, and my method throughout the book is to proceed from the examination of a particular city toward general problems of municipal administration." Comprehensive in treatment, the book is written in facile and live style.

The first part is concerned with the municipal history of Johannesburg. The next three chapters of the book deal with the "logical preliminaries to the actual working of city government": The Scope and Method of City Government; The Internal Structure of City Government; City Government and the Citizens. Remaining chapters discuss: The Public Servants at Work; The Finance of City Government"; Central Government and the City; The Past and the Future. The Appendixes include facts and statistics on Johannesburg: financial and population data, plans of departments, maps.

Planning

California is the birthplace of county planning. It is also the state with the greatest number of active official county planning agencies (the 57 California counties have 36 commissions). Therefore, a "Summary Report on the Work of County Planning Commissions in California," for the year 1937-38, has particular interest. Most of the report is concerned with accounts of the progress, in the different counties, of the master plan and official plans based thereon. It also covers expenditures and budgets, number of meetings held, administrative activities, reports issued, outstanding accomplishments during the year, and proposed activities for the ensuing year. iii + 36 pp. (Apply to Calif. County Planning Commission Association, 350 Bush Street, San Francisco, Calif.)

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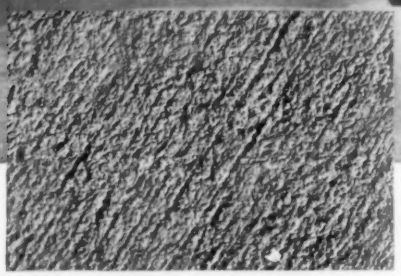

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Public Welfare

Your Community—Its Provision for Health, Education, Safety, Welfare.—By Johanna C. Colcord, Director, Charity Organization Department, Russell Sage Foundation, New York. 1939. 249 *pp., including index and list of references.* 85c.

Replacing the much-used pamphlet, "What Social Workers Should Know About Their Own Communities," this study manual is designed to guide the inquiring citizen and student in his search for a rounded picture of his community, particularly "as to the provision which that community makes to conserve the health and safety and to promote the education and general welfare of its inhabitants"; and to give him a "background from which to attack the problem of supplying community lacks and improving existing services." The treatment is non-professional, descriptive rather than evaluative. It covers provisions which the community makes for: crime; public safety; workers, wages, and conditions of employment; housing, planning and zoning; health care; the handicapped; education; recreation, religion; public assistance; family welfare; child care; foreign-born and racial groups; clubs and associations; agencies for community planning and coordination.

Taxation

"Who pays our taxes? How do our taxes compare with those abroad? Can taxes 'crush' business? Where does the money go?" These are some of the most common questions of the average taxpayer, that are answered for him in the comprehensive and easily read pamphlet, "Our Taxes—And What They Buy," just put out by Public Affairs Committee, Inc., of New York City. It covers briefly the high points of the taxation system, including the special problems that confront the taxpayer and the different levels of government today: Size of the Tax Bill; How the Money Is Collected, which analyzes different types of taxation; Who Pays the Taxes?; What Our Taxes Buy; Taxation Problems—aims of a tax system, economic limits, ease of administration, "fair" taxation, the real estate tax, capacity to pay, taxation and economic stability; Government Spending. 32 pp., illustrated. (Apply to Public Affairs Committee, Inc., 30 Rockefeller Plaza, New York.)

Residential Development

The rapidly growing movement for effective cooperation between city planning boards and the developers of high-grade residential subdivisions will gain added impetus from the February issue of the *National Real Estate Journal*. Practically this entire magazine of about 75 reading pages is devoted to a series of articles on the famous Country Club District of Kansas City and its realtor-builder, J. C. Nichols. Started in 1907, with vision almost unique in that day, the Country Club District has grown from a 10-acre tract to some 4,000 acres in Kansas City, Mo., and in an adjoining area across the state line in Kansas. In this city-within-a-city are housed some 35,000 persons in a district justly famed for its high standards of beauty, scientific land development and also its admirably planned shopping and recreation areas. 50c. (Apply to the National Real Estate Journal, 139 N. Clark St., Chicago, Illinois.)

Personnel

"The Municipal Personnel Service, Flint, Michigan" describes the workings of the civil service system as formally adopted by that city in an amendment to the city charter in 1935. The system was adopted because of the dissatisfaction—common also in other cities—with the inefficiency and unfairness of the spoils system existing before. This bulletin describes the following aspects of the system as it operates in Flint: the civil service commission; the classification and compensation plans; recruitment and examinations; promotions and transfers; the probationary period; temporary, seasonal and provisional appointments; special treatment of unskilled labor; transfers; discharges, suspensions, and lay-offs; vacations, leaves, and conditions of employment; training; organizations for municipal employees; retirement systems. 22 pp. 50c. (Apply to E. S. Guckert, Flint Institute of Research and Planning, Flint, Mich.)

Pump-Priming

Pump-Priming Theory of Government Spending.—Edited by Egbert Ray Nichols, assisted by William E. Roskam. H. W. Wilson Co., New York. 1939. 482 *pp., including 21-page list of references.* 90c; *reduction if bought in quantities.*

This latest number of The Reference Shelf on the much discussed and debated subject of government spending for the purpose of stimulating business, contains, like other volumes of this series, leading recent articles and speeches, and extended bibliography and references, on all phases and sides of the question dealt with. The book is divided into two parts: I, Economic Aspects of Government Spending, which analyzes the theory, problems, and implications of government spending and recovery, and gives the opinion of economists, government officials, business men, and the press on pump priming; and II, Political Aspects of Government Spending, which deals with the whole problem of politics in relief.

Public Works Administration

The Public Works Administration.—By Jack F. Isakoff. The University of Illinois Press, Urbana, Ill. 1938. $1.50 *paper-bound;* $2.00 *cloth-bound.*

This book is an analysis of the functioning of the Federal Emergency Administration of Public Works from the point of view of its organization and policies as a problem in public administration, the first such comprehensive survey of the PWA. The chapter headings are: Introductory Considerations (a general historical and descriptive account of the Administration); General Organization and Functions; Some Administrative Problems; Finances and Allotments; Project and Construction Policies; Summary and Conclusions. The final chapter—which discusses the objectives, structure, personnel, nature of activity, intergovernmental cooperation, direct Federal action, and housing program—evaluates the functioning of the Administration with a view to possible future development.

Clean Up—Paint Up

The new handbook for the organization and conduct of a "Clean Up, Paint Up, Fix Up Campaign," including "Plant Up, Light Up, Dress Up, Modernize Activities" has just been published. Written in snappy, promotional style, with lively illustrations, it outlines the purposes of such a campaign for cleanliness, health, safety, thrift, fire prevention, crime prevention, better housing, the home and community beautiful, employment and increased business; suggested procedure for organizing, financing and publicizing such a campaign; suggested programs; and announcement of the prizes offered for cities winning the annual competition held by the National Clean Up and Paint Up Campaign Bureau. Possible activities for all the various committees taking part in the drive are given. Representing every element in the community, these include committees on health, safety, street, police, merchants, public and office buildings, real estate, gardening, housing, utilities, transit, schools, churches, etc. 96 pp. (Apply to National Clean Up and Paint Up Campaign Bureau, 2201 New York Ave., N. W., Washington, D. C.)

Planning

The January Annual Report Number of *Pennsylvania Planning*, the monthly publication of the Pennsylvania State Planning Board, is a particularly lucid account of the purposes and present activities of the Board, with its recommendations to the Governor and Legislature for state improvements and developments. Chapters deal with: Place of Planning in Public Administration; Land Use Planning and Control, particularly of sparsely settled "problem areas," natural resources, and housing; Public Works and a Long-term Capital Budget, including description of steps being taken for the organization of a "ten-year moving schedule of public works," which would help to stabilize employment and industry; Coordinating and Promotional Functions of the Board; Mechanics of Public Planning; Recommendations. Maps and charts give a quick picture of planning problems peculiar to Pennsylvania, and of the present status of planning in this state. 38 pp. (Apply to State Planning Board, 928 N. 3d St., Harrisburg, Pa.)

Education for Citizenship

Education for Citizenship.—By Howard E. Wilson. The McGraw-Hill Book Co., Inc., New York. 1938. *xii* + 272 *pp.* $2.75 *from* THE AMERICAN CITY.

This is one of the publications of The Regents' Inquiry into the Character and Cost of Public Education in the State of New York. It is a critique and analysis of social-studies instruction in New York, and of what students get from this instruction. The report concludes that instruction in social studies in New York State is painfully inadequate, although no more so than in other states, and less so than in many. Although teachers of social studies are, generally speaking, a superior group, they lack "intimate connection, as adults, with the vital forces of organized political and economic life." The final chapter is devoted to conclusions and recommendations affecting both local practice and state policy.

Water Supply

The Water Department of Madison, Wis., has published "A Brief Historical Sketch" of the water works, from the time contracts were awarded in 1882 for the construction of the first equipment up to the present time. Intended for the Madison citizen, the pamphlet describes the organization, physical set-up, financing, and general workings of the Department. On the back of the cover page is the following apt Foreword: "The Water Department is owned by the citizens of Madison and is being operated for their benefit. It is our endeavor to give the best possible service at reasonable rates and we welcome at all times any suggestions or comments with reference to the betterment of service. Visitors are always welcome. . . ." 37 pp. (Apply to L. A. Smith, Supt., Water Dept., Madison, Wis.)

Housing

The part in the New York City housing movement played by the Tenement House Committee of the Charity Organization Society has been a prominent one. Its history is told in "Forty Years of Housing," a year-by-year account of the activities and accomplishments of the Committee from its establishment in 1898 to 1938. Among these many accomplishments are: large responsibility for the adoption in New York of laws to raise general housing standards, and for preventing the adoption of undesirable laws; constantly bringing to the attention of the proper city department, through its clearing service, specific cases of bad housing; improvement of housing administration in the city; research on specific housing problems; a housing educational program and field work training school in housing, for social workers. 48 pp. 25c. (Apply to Committee on Housing, Charity Organization Society, 105 E. 22d St., New York.)

Housing

A comprehensive survey of substandard housing and living conditions in Poughkeepsie, conducted by the Housing Survey Committee of the City Planning Commission, is reported in "Housing Survey, Poughkeepsie, N. Y." Summarized in this report largely in table, graph and map form, data were collected on two main aspects of substandard housing: structural conditions, and social conditions. A summary of this information gives a clear, quick picture of sub-standard housing conditions in Poughkeepsie, what should be done to get rid of them, and prevent their further growth. 86 pp. (Apply to Housing Survey Committee, City Planning Commission, Poughkeepsie, N. Y.)

Elections

The Flint Institute of Research and Planning has published "The Use of Voting Machines in Thirty-Five Cities or Counties," the results of a questionnaire on the pros and cons of voting machines as a substitute for the paper ballot. The greater part of the report is occupied with the tabulated results of the answers received from the questionnaire. A summary analysis with general conclusions on the value of voting machines is also given, as well as an explanation of the way voting machines work, and a brief discussion of what the advocates and opponents say about them. 24 pp. 50c. (Apply to Max P. Heavenrich, Jr., Flint Institute of Research and Planning, Flint, Mich.)

"And what, my good man, is a ring gear thrust plate?"

It's NO WONDER the duchess doesn't understand. She doesn't drive a truck. But when we mention a ring gear thrust plate to you, we're talking a truck man's language. You recognize it as evidence of the care and study behind Ford rear axle design. And there's a lot more evidence of quality building in every Ford Truck—such features as the V-8 engine, straddle-mounted pinion, needle roller bearing universals, and a score of others. They all add up to quality—and that's the basis of Ford dependability, economy and long life.

CHECK YOUR TRUCK AGAINST THESE QUALITY FORD FEATURES!

V-8 ENGINES—95, 85, 60 HP.—Smooth, dependable, low-cost power. Quality materials and precision workmanship for efficient operation and long life.

SEMI-CENTRIFUGAL CLUTCHES—Non-tiring pedal action. Centrifugal force provides tremendous power-transmitting capacity. Up-keep costs kept at a minimum.

STURDY TROUBLE-FREE TRANSMISSIONS—Large roller and ball bearings for all forward speeds reduce friction, save power. Oil-hardened chromium-steel gears for long service.

FULL TORQUE-TUBE DRIVES—Springs relieved of driving and braking stresses provide better cushioning of truck and its load. Shackle-bolt wear reduced, spring life prolonged.

RUGGED REAR AXLES—All driving pinions are straddle-mounted to maintain gear-tooth alignment. All truck axles are full-floating, with weight carried on axle housing—none on axle shafts. These features increase dependability and long service, reduce up-keep expense.

BIG POWERFUL HYDRAULIC BRAKES—Equalized braking action for straight stops. Big brake-drum diameters and large lining areas for long brake life and low-cost maintenance.

• *In every detail, the quality of all Ford bodies matches the high quality of Ford chassis. Their exceptional durability means long service with low up-keep cost.*

FORD V·8 TRUCKS *and Commercial Cars*

Ford Motor Company, Builders of Ford V-8 and Mercury Cars, Ford Trucks, Commercial Cars, Station Wagons and Transit Buses

During March we hope you will remember to mention THE AMERICAN CITY.

Social Welfare

Social Work Year Book.—Russell H. Kurtz, Editor. Russell Sage Foundation. 1939. 730 *pp., including* 19-*page index.* $3.50.

This biennial publication "undertakes to report the current status of organized activities in social work and in related fields." The present volume is the fifth to be published. It is divided into three major sections. Part One consists of 82 signed articles prepared by authorities on the topics discussed. It presents a "factual, cross-section view of organization and practice in the various fields as they appeared in 1938, with a minimum of historical background and of forecast." References on each subject are included, totaling, for the whole volume, 1,053 books and pamphlets and 358 magazine articles, a comprehensive bibliography on social work. Part Two describes public assistance programs in the 48 states. Part Three, Directory of Agencies, lists and describes briefly national and state social agencies, both public and private.

Subjects covered in the Yearbook which are of particular interest to readers of THE AMERICAN CITY are: civil liberties; the CCC; community centers; disaster relief; health; housing and city planning; crime; prisons, reformatories and jails; public welfare; recreation; transiency, immigration and non-residence; unemployment relief; workmen's compensation.

Traffic

The 1938 Proceedings of the Institute of Traffic Engineers contains papers by 24 different speakers, delivered at the annual convention and regional meetings. Special attention was given to the subjects of parking, lighting and highway design, each of which is the topic of several talks. 106 pp. $1.10 postpaid. ($1.00 if cash accompanies order.) (Apply to Harold F. Hammond, Institute of Traffic Engineers, 60 John St., New York.)

Taxation

"Tax facts must precede tax acts."

On this principle, the Princeton Survey of New Jersey Finance (of the School of Public and International Affairs of Princeton University) is issuing a series of Public Interest Folders, prepared to "inform the taxpayer on essential facts of the New Jersey tax structure, and to set the background for proposals looking toward the financial stability of state and local governments and fair treatment for . . . tax-paying citizens and . . . economic enterprises." The January 30 issue shows in table form, and almost at a glance, how many ways there are of levying taxes in New Jersey, who levies these taxes, where they come from, and who spends them. 3 pp. (Apply to Princeton Survey of New Jersey Finance, Princeton University, Princeton, N. J.)

Health and Food

Teachable Moments—A New Approach to Health. —By Jay B. Nash, Ph.D., Chairman, Department of Physical Education and Health, New York University. A. S. Barnes & Co., New York. 1938. *X* + 243 *pp.* $1.50 *from* THE AMERICAN CITY.

A critical volume aimed to explode non-essential health ideas and over-advertised, refined, patented and packaged foods and drugs. The author advocates less of the bogey-man methods of teaching health to children, and the use of three simple rules, sleep, rest and simple foods, as an essential pattern for children or adults.

Other Reports Received

ALBANY, N. Y.—"Progress—The Port of Albany." 1939. 2 pp. Apply to Albany Port District Commission.

CINCINNATI, OHIO—Annual Report, Dept. of Purchasing. 1938. 10 pp.

LOS ANGELES, CALIF.—Annual Report, Board of Public Works, year ending June 30, 1938. 159 pp.

TOPEKA, KANS.—"Topeka Reviews Its Work Relief." Apply to Commissioner of Finance and Revenue. 65 pp.

WINSTON-SALEM, N. C.—"Statement of Financial Information." Apply to Commissioner of Public Accounts and Finance. 10 pp.

Conventions -- When and Where

Meeting is annual convention unless otherwise designated

MARCH 30-31.—ROCHESTER, N. Y.
American Water Works Association—New York Section. (Hotel Sagamore.) Sec.-Treas., R. K. Blanchard, 50 W. 50th St., New York.

APRIL 10-12.—MEMPHIS, TENN.
American Water Works Association—Kentucky-Tennessee Section. (Peabody Hotel.) Sec.-Treas., Howard D. Schmidt, 420 6th Ave., N., Nashville, Tennessee.

APRIL 10-12.—FAYETTEVILLE, ARK.
Arkansas Water and Sewage Works Conference. (Engineering Bldg.) Sec., Harrison Hale, Univ. of Arkansas, Fayetteville, Ark.

APRIL 12-14.—TORONTO, ONT.
American Water Works Association—Canadian Section. (Royal York Hotel.) Sec.-Treas., Dr. A. E. Berry, Dept. of Health, Toronto, Ont.

APRIL 14-15.—GREAT FALLS, MONT.
American Water Works Association—Montana Section. (Park Hotel.) Sec., Herbert B. Foote, State Dept. of Health, Helena, Mont.

APRIL 17-19.—SPARTANBURG, S. C.
American Water Works Association—Southeastern Section. (Cleveland Hotel.) Sec.-Treas., B. P. Rice, 422 State Office Bldg., Columbia, S. C.

APRIL 20-22.—URBANA, ILL.
American Water Works Association—Illinois Section. (Urbana-Lincoln Hotel.) Sec.-Treas., W. D. Gerber, P. O. Box 232, Urbana, Ill.

APRIL 25-26.—INDIANAPOLIS, IND.
American Water Works Association—Indiana Section. (Antlers Hotel.) Sec., J. A. Bruhn, Box 855, Indianapolis, Ind.

APRIL 27-28.—DAYTON, OHIO.
American Water Works Association—Ohio Section. (Van Cleve Hotel.) Sec., T. R. Lathrop, State Dept. of Health, Columbus, Ohio.

MAY 4-6.—MIAMI, FLA.
American Water Works Association—Florida Section. (Alcazar Hotel.) Sec., J. R. Hoy, 404 Hildebrandt Bldg., Jacksonville, Fla.

MAY 4-5.—CUMBERLAND, MD.
Maryland-Delaware Water and Sewerage Association. Sec., A. W. Blohm, 2411 N. Charles St., Baltimore, Md.

MAY 8-13.—CHICAGO, ILL.
National Fire Protection Association. M'ng Dir., Franklin H. Wentworth, 60 Batterymarch St., Boston, Mass.

MAY 11-13.—TACOMA, WASH.
American Water Works Association—Pacific Northwest Section. (Winthrop Hotel.) Sec., Fred Merryfield, Oregon State College, Corvallis, Ore.

MAY 15-17.—BOSTON, MASS.
National Conference on Planning. (Hotel Statler.) Joint annual conference of American Society of Planning Officials, American Planning and Civic Association, National Economic and Social Planning Association and American Institute of Planners. Conference Dir., Miss Elisabeth H. Herlihy, Room 24, State House, Boston, Mass.

JUNE 11-15.—ATLANTIC CITY, N. J.
American Water Works Association. (Hotels Ambassador and Chelsea.) Sec., Harry E. Jordan, 22 E. 40th St., New York.

JUNE 13-16.—MILWAUKEE, WIS.
Smoke Prevention Association. Sec., Frank A. Chambers, 1411 City Hall Square Bldg., Chicago, Illinois.

JUNE 18-24.—SAN FRANCISCO, CALIF.
American Library Association. Sec., Carl H. Milam, 520 N. Michigan Ave., Chicago, Illinois.

JUNE 20-22.—BUFFALO, N. Y.
American Public Welfare Association. Dir., Fred K. Hoehler, 1313 E. 60th St., Chicago, Ill.

JUNE 20-22.—PROVIDENCE, R. I.
New England Association of Fire Chiefs. Sec., John W. O'Hearn, Watertown, Mass.

JUNE 28-30.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. Sec.-Treas., I. M. Glace, 22 S. 22d St., Harrisburg, Pa.

JULY 5-13.—STOCKHOLM, SWEDEN.
International Federation for Housing and Town Planning. Sec., Mrs. Paula Schafer, rue Cantersteen 47, Shell Bldg. 608, Brussels, Belgium.

JULY 17-22.—OGDEN, UTAH.
National County Officers' Association. Pres., George F. Breitbach, Court House, Milwaukee, Wisconsin.

AUGUST 14-17.—CEDAR RAPIDS, IOWA.
League of Iowa Municipalities. Sec.-Treas., Frank G. Pierce, Marshalltown, Iowa.

AUGUST 24-25.—DULUTH, MINN.
American Water Works Association—Minnesota Section. Sec.-Treas., Ronald M. Finch, Wallace & Tiernan Co., Inc., 414 Flour Exchange, Minneapolis, Minn.

SEPTEMBER 12-14.—KANKAKEE, ILL.
Illinois Municipal League. Sec., A. D. McLarty, 500 E. Capitol Ave., Springfield, Ill.

SEPTEMBER 13-15.—LANSING, MICH.
American Water Works Association—Michigan Section. (Olds Hotel.) Sec., M. N. Gerardy, Water Board Bldg., Detroit, Mich.

SEPTEMBER 18-21.—OAKLAND, CALIF.
League of California Municipalities. Sec., Richard Graves, 223 City Hall, San Francisco, Calif.

SEPTEMBER 18-19.—OLD POINT COMFORT, VA.
League of Virginia Municipalities. Exec. Sec., Morton L. Wallerstein, 902 Travelers Bldg., Richmond, Va.

OCTOBER 5-6.—READING, PA.
American Water Works Association—Four States Section. Sec.-Treas., Carl A. Hechmer, Washington Suburban Sanitary District, Hyattsville, Maryland.

OCTOBER 9-11.—PITTSBURGH, PA.
American Public Works Association. Exec. Dir., Frank W. Herring, 1313 E. 60th St., Chicago, Ill.

OCTOBER 9-12.—PROVIDENCE, R. I.
International Municipal Signal Association, Inc. (Providence-Biltmore Hotel.) Sec., Irvin Shulsinger, 7 E. 42d St., New York.

OCTOBER 11-13.—KANSAS CITY, MO.
American Water Works Association—Missouri Valley Section. (Hotel President.) Sec., Earl L. Waterman, Univ. of Iowa, Iowa City, Iowa.

OCTOBER 16-19.—DALLAS, TEXAS.
American Water Works Association—Southwest Section. Sec.-Treas., Lewis A. Quigley, 3320 W. Berry St., Fort Worth, Texas.

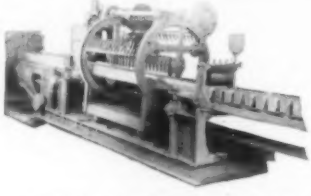
OCTOBER 16-19.—SAN FRANCISCO, CALIF.
International Association of Chiefs of Police. Exec. Vice-Pres., William F. Rutledge, 1313 E. 60th St., Chicago, Ill.

OCTOBER 16-20.—CINCINNATI, OHIO.
National Association of Public School Business Officials. Sec., H. W. Cramblet, Board of Education, Pittsburgh, Pa.

OCTOBER 16-20.—ATLANTIC CITY, N. J.
National Safety Council. M'ng Dir., W. H. Cameron, 20 N. Wacker Drive, Chicago, Ill.

OCTOBER 17-20.—PITTSBURGH, PA.
American Public Health Association. (William Penn Hotel.) Exec. Sec., Dr. Reginald M. Atwater, 50 W. 50th St., New York.

OCTOBER 25-28.—SAN FRANCISCO, CALIF.
American Water Works Association—California Section. Sec.-Treas., Carl M. Hoskinson, Division of Water, Sacramento, Calif.



Greater Uniformity . . . May Be Pre-inspected

ONLY BRICK PAVEMENTS have a traffic surface that is made in a factory under positive control. Hence a highly uniform surface. And one that can be inspected before it is put in place. Modern methods of filler application further develop its non-skid properties.

And, in addition to a maximum degree of safety, brick offers the lowest cost per year of any pavement! More than any other modern pavement, brick is highly resistant to weather damage. Brick that have served two score years and more in severest service are being reclaimed and relaid on new bases.

Brick pavements have the best record for low cost wear. Use on roads or streets — for new construction or resurface jobs. National Paving Brick Association, National Press Building, Washington, D. C.

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News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

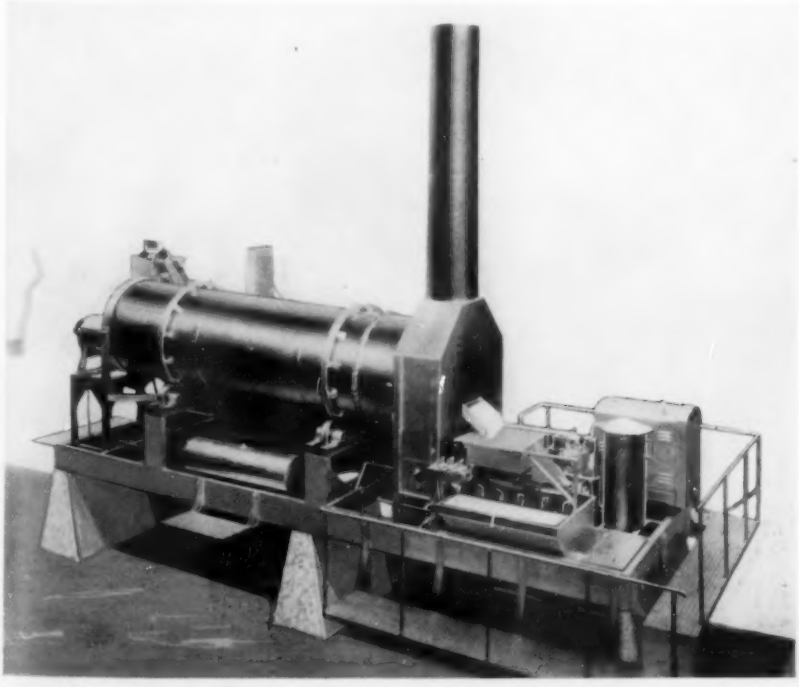
New Asphalt Plant for Municipal Service

An asphalt plant of moderate capacity, especially designed for large maintenance or small production work, is being offered by the White Manufacturing Co., Elkhart, Ind.

This Model L-12 plant shown in the illustration has a conservative rating of 12 tons per hour. It has an aggregate dryer 46 inches in diameter by 15 feet long, equipped with cascading shelves and also center cross flights which considerably increase the amount of hot steel on which the aggregate is dried. The dryer is equipped with an inspirating type low-pressure oil burner and exhaust stack. Because of the type of burner and the size of the stack, no exhaust blower is necessary. Temperatures of discharged material can be as high as is practical for bituminous work.

In this plant, material is fed to the dryer by an elevating loader which is part of the unit. Model L-12 is regularly equipped with volumetric measuring devices which accurately comply with the specified formula. The plant can be used, however, with standard bins and weigh scales. The illustration shows the dryer discharge to a volumetric measuring hopper, with the pug-mill underneath, and the bitumen measuring trough. The discharge chute from the dryer, the measuring hopper and pug-mixer discharge gates are all air-operated. The unit is equipped with a 300-gallon bitumen heater with an oil burner.

This plant is driven by a Continental engine, and has a LeRoi compressor. It can also be furnished as a portable machine on pneumatic-tired wheels. Its weight is 21,500 pounds. A similar model has a capacity of 25 tons per hour.

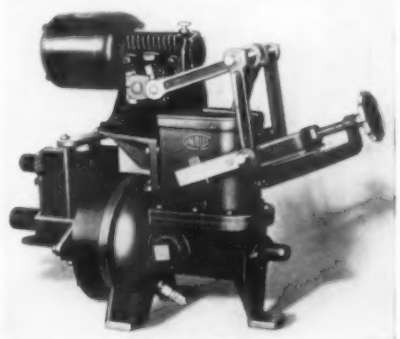


THE MODEL L-12 WHITE ASPHALT PLANT OF 12 TONS PER HOUR CAPACITY

ONE OF THE NEW GMC PICK-UP TRUCKS DUMPING STREET REFUSE AT THE OVERHEAD 16TH STREET LOADING PLATFORM, SAN FRANCISCO

Plunger-Diaphragm Pump for Chemical Solutions

A new combination plunger-diaphragm pump for volumetrically measuring and pumping clear, corrosive chemical solutions for water or sewage treatment has been announced by International Filter Co., 59 East Van Buren Street, Chicago, Ill. The action of this Type DP pump is simple and positive. The plunger of the displacement pump actuates a rubber diaphragm by means of a transmission liquid, and the diaphragm in turn, with the solid rubber pumping chamber and valves, actually handles the solution. The liquid comes in contact only with the rubber. Any of the transmission liquid that slips past the piston rings is automatically returned through a compensating valve mechanism, assuring continued accuracy. The transmission liquid is a non-conductor of electricity and, should the solution being pumped leak past the diaphragm, it instantly changes the transmission liquid to a conductor, closes an electrical circuit and sounds a warning. An anti-freeze transmission liquid is furnished for operation in freezing temperatures.



THE NEW INFILCO TYPE DP PUMP FOR MEASURING CHEMICAL SOLUTIONS

The rate of chemical feed is varied by adjusting the piston stroke or by changing the speed of the motor or other prime mover. The length of stroke is regulated by a hand screw on the rate-setting arm. Adjustments can be made while the feeder is in operation. This pump works under both suction lift and discharge head.

CALCIUM CHLORIDE ADMIXTURE–BETTER AT LOWER COST

In concrete construction, in any weather, calcium chloride, used as an admixture, improves the quality of the concrete.

The addition of calcium chloride produces a high early strength concrete—denser, stronger, more homogenous. The "fat" mixture fills forms completely, without excess water content. Concrete cures with greater certainty and greater uniformity. Those are the advantages which calcium chloride adds to the concrete itself. Now look at what calcium chloride admixture does to your costs!

It produces control-cured concrete with minimum time and labor. Because concrete sets faster, shores and forms may be released faster—in 1/3 to 1/2 the usual period. Because calcium chloride makes a "fat" mixture, it is handled and placed with a minimum of labor. Free-flowing concrete with calcium chloride admixture fills forms more completely, cuts down the necessary hand work in patching and finishing.

Have you the latest facts about calcium chloride admixture for concrete? Get them. Learn how easy it is to use and what you can expect it to do for your concrete construction. Write for full details today!

CALCIUM CHLORIDE ASSOCIATION
4145 PENOBSCOTT BUILDING • DETROIT, MICHIGAN

CALCIUM CHLORIDE FOR CONCRETE CURING

THE BEAVER MODEL C PORTABLE POWER HEAD IN USE BY TWO MEN AT SAME TIME

Portable Power Machine for Pipe and Bolt Jobs

A portable power adapter for threading 2-inch pipe with full-width solid dies, and able to cut and thread up to 8-inch pipe with geared tools and drive-shaft, has been announced by Beaver Pipe Tools, Inc., Warren, Ohio. The Beaver Model C is designed for either bench or stand use and is compact and safe. The gears are fully enclosed so that workmen cannot get their fingers caught in open revolving gears, and the large driving gear operates through a bath of oil, reducing friction, heat, noise and wear. A conventional-type geared chuck is used, which is tightened and loosened by turning a standard chuck wrench, eliminating the severe strain imposed on gearing by chucks which are tightened with a long bar.

In addition to handling pipe, it will thread bolts up to 1½-inch, owing to its rugged construction. Two men can work at the same time with this machine, one man threading and the other bending pipe or making up fittings. The net weight of the Model C bench unit is approximately 140 pounds, and it is 12½ inches high, standing on a base 18 x 18 inches. The base dimension mounted on legs is 42 x 46 inches. The motor used on the Model C is a Black & Decker Universal motor of ½-hp nominal rating, developing an actual horsepower of 1.59.

A Striking Showing of Night Road Signs

In an endeavor to bring the effectiveness of its reflecting material for road signs to the attention of highway engineers, Prismo Safety Corporation, Division of John R. Wald Co., Huntington, Pa., arranged a novel visualizer for the San Francisco Road Show. This large tunnel-type demonstrator shows, under actual automobile lighting conditions, highway scenes in true proportion. Miniature bridges, underpasses, road intersections, traffic circles and other types of road engineering are included and each properly marked with the correct form of warning sign and marker in true proportion.

All the markings, road stripings and signs are Prismo-treated for greater night effectiveness. The process consists of a special type of pigmented binder in which are embedded countless miniature glass spheres to half of their circumference. These serve as reflecting lenses under the beam of headlights.

With this treatment, those viewing the scene can judge the effectiveness of this type of marking on signs, as well as on vertical surfaces such as underpasses, bridges and barricades where flexible Fibreglas treated with Prismo spheres is also used as it would be employed for temporary marking.

Special Feature of New York W. W. Meeting

At the meeting of the New York Section of the American Water Works Association, to be held in Rochester, N. Y., on March 30 and 31, 1939, at the Sagamore Hotel, an innovation is to be introduced into the program. The special session on Friday, March 31, will be conducted on water treatment. The regular sessions of the meeting and the regular program will be held at the same time as usual. Various authorities having extensive experience with water treatment and purification in New York State supplies are to present papers and discussions. With this added feature, it is expected that many of the water-works operators connected with water purification and treatment will attend the meeting at Rochester, according to Rollo K. Blanchard, Secretary-Treasurer, New York Section, A. W. W. A.

New Motor Grader That Backslopes

A new motor grader, a medium-size popular-price machine known as Model 302, has been announced by J. D. Adams Co., Indianapolis, Ind., and is claimed to be capable of building and maintaining roads from bank to bank, including the backsloping. This machine is similar in design to the large Adams heavy-duty motor graders and has many of the same features of design and construction. It employs the Monomember frame which allows for better blade visibility, plus a wider range of blade positions. This is said to be the first motor grader of this size on which the blade can be swung outward to cut high or low backslopes.

The machine's weight is said to be balanced so that more pressure can be exerted on both blade and scarifier than is possible with other machines of similar size and without affecting the traction. The No. 302 is powered by an International I-30 tractor with an engine developing 45½ horsepower. Three types of drive are offered: two-wheel drive with dual, or with single tires for strictly maintenance work; an Adams four-wheel tandem drive which provides maximum traction for all types of work. Optional equipment includes leaning front wheels, scarifier, canopy top, cab enclosure, starting and lighting equipment, V-type snowplow and snow-wing. A catalog describing this new machine in detail may be had on request to J. D. Adams Co., Indianapolis, Ind., or through THE AMERICAN CITY.

Howard Stillwell with Asbestos Cement Pipes

Howard L. Stillwell, well-known to the water-works industry because of his former connection with the Leadite Co. of Philadelphia in the capacity of southern sales representative, has been named General Sales Manager of Asbestos Cement Pipes, Inc., 225 Broadway, New York.

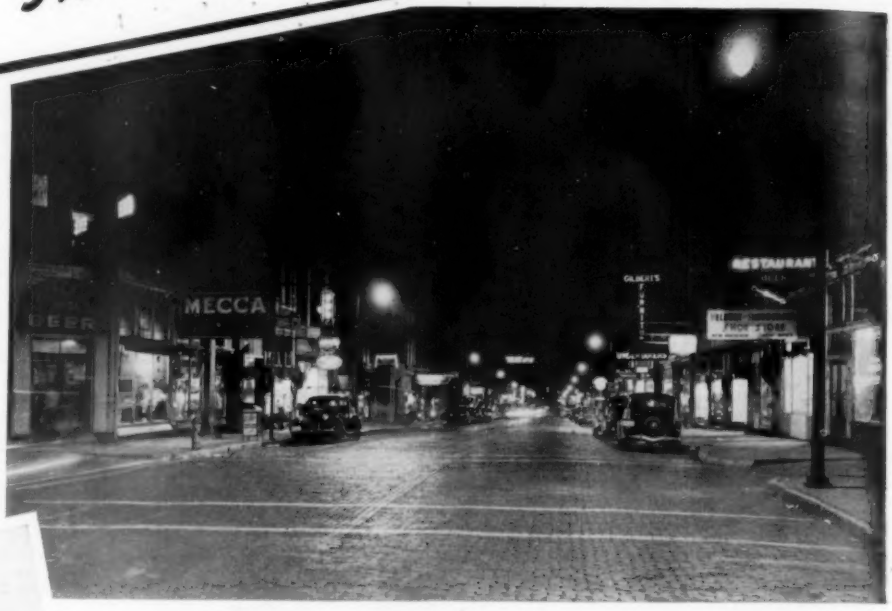
Before joining the Leadite Company twelve years ago, Mr. Stillwell was associated for six years with Solomon-Norcross Co., consulting engineers. He also served as City Engineer of Atlanta, Ga.

Rockwell Made Officer of W. W. Mfrs. Assn.

The Water Works Manufacturers Association, affiliate of the American Water Works Association, has elected Willard F. Rockwell, President of Pittsburgh Equitable Meter Co., Pittsburgh, Pa., as a Vice-President of the Manufacturers Association to fill the vacancy created by the death of Edward A. Johnson, who was Vice-President of the same company.

THE NEW MODEL 302 ADAMS MOTOR GRADER

TRAFFIC SAFETY LIGHTING SAVES LIVES *In Ashland, Ohio*



ASHLAND, OHIO, (Population 11,401) has adopted Westinghouse TRAFFIC SAFETY LIGHTING to reduce nighttime traffic deaths. Thirty-nine Reflectolux Sr. luminaires were installed by the Ohio Public Service Company on main thoroughfares. Twelve Reflectolux Sr. units with Sodium Vapor lamps illuminate dangerous intersections.

Westinghouse Reflectolux Sr.—Designed for Incandescent, Combination Mercury-Incandescent and Sodium lamps.

Streetlighting was primarily and originally a safety measure. But because illuminating engineers applied the science of seeing to the visual needs of the automobile driver, streetlighting systems are now reaching their fullest safety value.

As speed and heavier nighttime traffic have increased the need for TRAFFIC SAFETY LIGHTING, Westinghouse has kept pace with the perfection of new lighting equipment and product improvements. Westinghouse makes available luminaires, accessories and control equipment for every street and highway illuminating need. Carefully prepared engineering specifications and rigidly controlled tests at the factory and on the job assure absolute satisfaction.

For complete details on the Reflectolux line of luminaires and the Sodium Highway Luminaire, call your local Westinghouse Lighting Specialist, or address Westinghouse Electric & Mfg. Co., Lighting Division, Edgewater Park, Cleveland, Ohio.

Westinghouse Lighting Equipment

During March we hope you will remember to mention THE AMERICAN CITY.

ROBERT W. LEA

New Vice-President of Johns-Manville

Robert W. Lea, who resigned as President of the West Virginia Coal and Coke Co. on January 18, has been elected a Vice-President of Johns-Manville Corporation, 292 Madison Avenue, New York. Mr. Lea will be in charge of finance and will take over the position formerly held by Enders M. Voorhees, who left Johns-Manville to become Chairman of the Finance Committee of the United States Steel Corporation.

Malcolm Pirnie Takes Over Everett Practice

Malcolm Pirnie, civil engineer, 25 West 43rd Street, New York, formerly a partner in Hazen and Whipple and later in Hazen, Everett and Pirnie, has acquired all the records, plans and specifications of Chester M. Everett, 22 East 40th Street, New York, who has closed his offices. Mr. Everett will be available for consultation by special appointment through Mr. Pirnie.

New Home Office of E. T. L.

Electrical Testing Laboratories recently moved into its new home at East End Avenue and 79th Street, New York, a section which is zoned for non-business purposes. Both East End Avenue and 79th Street are unusually wide, insuring ample light and air. A crosstown bus on 79th Street connects with all north-and-south Manhattan transit lines. The new East River Drive, connecting lower Manhattan with the Triborough Bridge, is 100 yards from the entrance.

The eight-story building, five floors of which are occupied by E. T. L., houses comprehensive equipment having a present-day book value in excess of $400,000. On the first floor the heavy testing equipment is located, and a recessed loading platform keeps delivery trucks off the sidewalk. Special quarters are provided for the Chemical Department and Photometric Department. The third floor houses the Lamp Performance Research Laboratory, and the fourth floor contains various divisions of the Electrical Laboratory with offices of the supervising force. Other offices are on the fifth floor.

Changes in Sales Force at Lynchburg Foundry

Lynchburg Foundry Co., Lynchburg, Va., announces that the office of Vice-President in Charge of Sales for the company has been abolished. On the retirement of G. R. Johnson, former occupant of that post, John T. Woodson was named to handle the position of General Sales Manager of the Pipe and Fitting Department. The former Western Sales Manager stationed at Chicago, W. R. Odor, has been called to Lynchburg to become Sales Manager of the Pipe and Fitting Department, starting May 1, and the present New York Manager, J. C. Barksdale, will be transferred to Chicago as Western Sales Manager. Miss Agnes Moran has been appointed New York Manager.

Lajeunesse Joins Union Metal Mfg. Co.

V. J. Lajeunesse, formerly Assistant Manager of Illuminating Laboratory and Lighting Sales for General Electric Co., last month assumed his new duties as Manager of Lighting Sales for The Union Metal Mfg. Co., Canton, Ohio.

Mr. Lajeunesse's long association with the street-lighting department of General Electric, together with his wide acquaintance in the electric industry, gives him an excellent background for his new work. Union Metal was organized in 1906 as a manufacturer of steel columns and has expanded its line since that time to include standards for traffic signals, signs, floodlighting, street, highway, and bridge lighting, power transmission poles, and fluted Monotube piles.

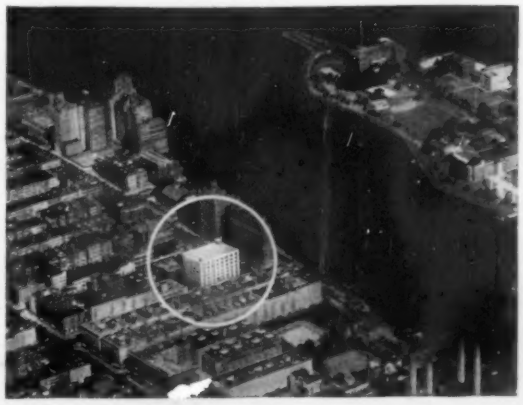


Photo by McLaughlin Photo Service
AN AIRPLANE VIEW OF THE NEW HOME OF ELECTRICAL TESTING LABORATORIES

Proof that a Peerless Pump will pay for itself...

When we say that Peerless turbine pumps frequently return their original cost in lower power bills, we're talking facts. Here's a typical case. The City of Cashmere, Washington, recently installed a Peerless turbine pump that is delivering water for $.0052 per thousand gallons, against a former cost of $.01. On a basis of continuous operation, the saving will return the entire cost of the installation in seven months and every seven months thereafter, during the entire life of the pump. Here is real cash saving—money that you can put in the bank or spend for other things you need. Write for new bulletin explaining how and why Peerless saves you money.

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PERFORMANCE WITH ECONOMY

Night Fatalities Reduced 85%

on Main Traffic Artery Near Salt Lake City

Motorists travel more safely on this 3.4-mile [illegible]-lighted section of State Street, busy traffic artery near Salt Lake City, Utah. There was only one night fatality here in a year, but on a similar adjacent section, inadequately lighted, there were twelve

"Sodium lighting has proved to be all and more than we expected from a standpoint of economy of operation, ease of driving, and safety to pedestrians and automobile drivers," says Mr. J. B. Mullins, County Commissioner, Salt Lake County, Utah.

ONLY one night fatality in a year where seven deaths occurred during the previous year—that's the accident record of 3.4 miles of the most heavily traveled traffic artery in Utah after G-E sodium lighting was installed. Officials responsible for traffic safety are unanimous in their praise of the installation for its effectiveness and economic operation.

Many cities are using G-E sodium lighting to reduce accidents at outlying intersections, underpasses, and other dangerous places. In Los Angeles, for example, night accidents dropped 93 per cent at 23 intersections after G-E sodium lighting was installed.

There undoubtedly are night-accident zones on the outskirts of your city which could be made safer for night traffic with G-E sodium lighting. A G-E lighting specialist will be glad to survey your accident situation and to help you set up a lighting program to meet your needs. For more information on safety lighting, send the coupon to General Electric, Schenectady, New York.

The soft, golden-yellow light of G-E Type M-2 sodium luminaires, the absence of objectionable glare, and their high operating efficiency have resulted in their extensive application for safety illumination. Complete information about the application of sodium lighting will be supplied on request.

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GENERAL ELECTRIC

HTH BEING LOADED INTO A PLANE AT WASHINGTON AIRPORT

HTH Goes by Plane to Chile Earthquake Area

The recent disastrous earthquake in Chile brought in its wake the additional menace of disease from disrupted water-supply and sewage-disposal facilities. A call went out for emergency supplies of chlorine — chlorine in a concentrated mobile form that could be flown to the stricken area. The need was quickly met by The Mathieson Alkali Works, Inc., 60 East 42nd Street, New York, which made a shipment of HTH by plane to Santiago, Chile.

Crowther Promoted by General Electric

F. D. Crowther has been named commercial assistant to A. F. Dickerson, Manager of the Illuminating Laboratory and Lighting Sales Section of General Electric Co., Schenectady, N. Y. Mr. Crowther, who has specialized in street-lighting sales since 1930, joined the General Electric Co. in 1927, after graduation from Oregon State College with a B.S. degree in electrical engineering. He was employed in the Testing Department until 1928, when he was transferred to the Illuminating Laboratory. In 1930 he entered the commercial section, and he has since specialized in street lighting.

Larger Peerless Factory For Pump Developments

Expanding markets and two new pump developments have made it necessary for Peerless Pump Division, Food Machinery Corporation, Los Angeles, Calif., to build a new and larger factory, according to an announcement by Vernon Edler, Vice-President and General Manager. The first of these is a revolutionary new pump for small-capacity deep-well pumping requirements. The pump head and shaft follow conventional turbine design, but the pumping element is entirely different, consisting merely of a spirally twisted shaft of solid stainless steel inside a cutless rubber bearing. The element is very small, only 3 inches in diameter by 10 inches long, but it has great lifting power. A single element will lift 50 gallons per minute 200 feet, while two elements will lift the same quantity 500 feet.

The second development is a very-large-capacity, low-lift pump of the type used by irrigation and drainage districts to handle huge quantities of water up to 100,000 gallons per minute. This design embodies the very latest ideas in hydraulics, including such items as air foil sections, etc., and is the joint development of Prof. R. G. Folsom of the University of California, and J. M. Hait, Chief Engineer of Peerless.

The new plant will give the manufacturer about five times as much floor area as the present factory buildings, stated Mr. Edler, and will permit the most advanced methods of straightline production. Incorporated in the plan is a new hydraulic testing laboratory, perhaps the finest commercial installation of its kind, which will make it possible to run performance tests on pump capacities as high as 75,000 gallons per minute.

New Association of Makers of Sewer Pipe

Ohio, Pennsylvania and Michigan manufacturers of clay sewer pipe have recently organized an association for the advancement and promotion of vitrified clay sewer pipe. The Clay Sewer Pipe Association, Inc., Oliver Building, Pittsburgh, Pa., will extend as rapidly as possible to other cities in the East.

This promotional effort will be under the direction of H. C. Maurer, of Akron, Ohio. For many years Mr. Maurer has been connected with various members of the sewer-pipe industry in a sales capacity. As a result, he has an excellent background for approaching the problems of market expansion and general promotion of vitrified clay sewer pipe.

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The Eyes of Texas Are Upon Austin

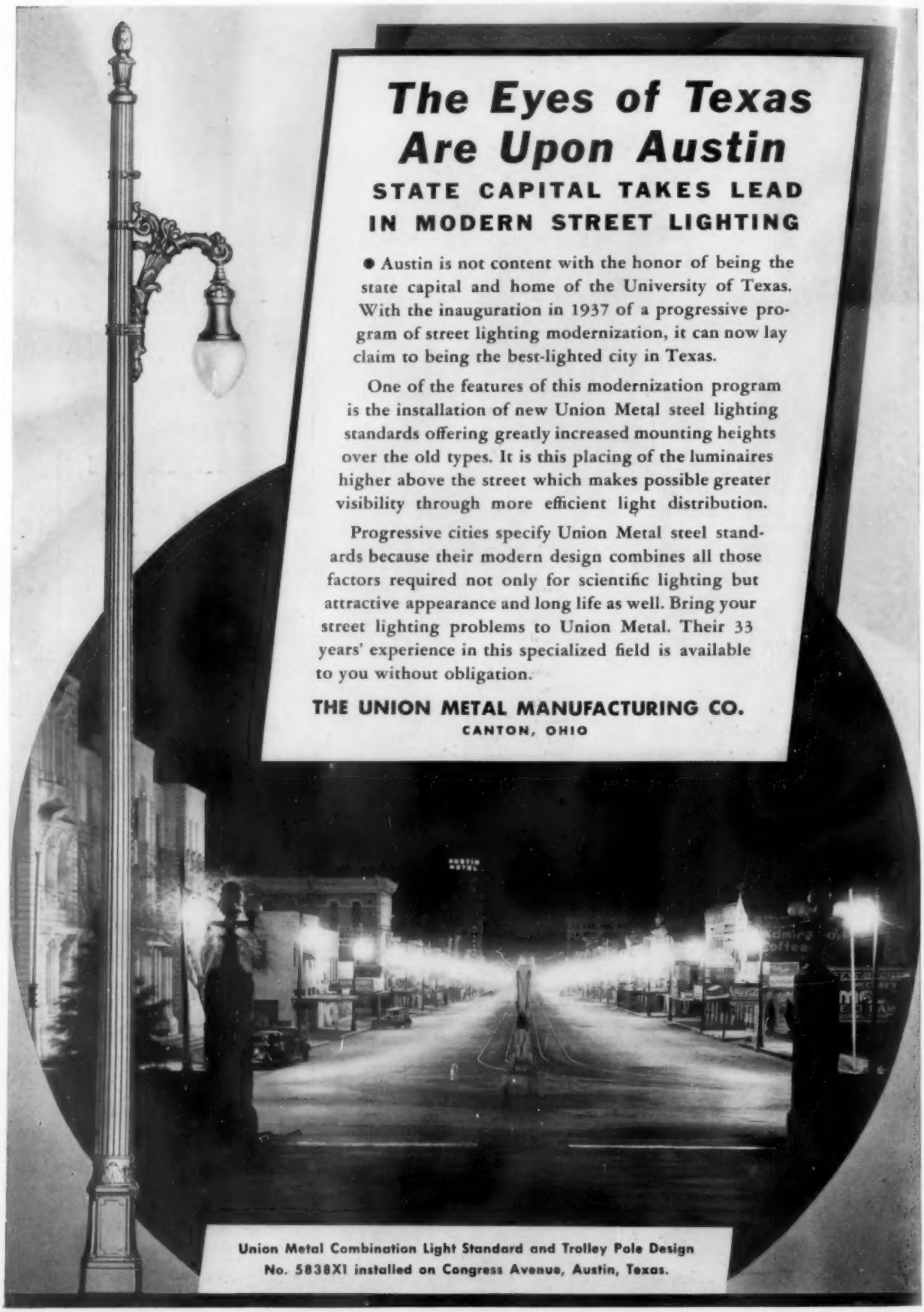
STATE CAPITAL TAKES LEAD IN MODERN STREET LIGHTING

● Austin is not content with the honor of being the state capital and home of the University of Texas. With the inauguration in 1937 of a progressive program of street lighting modernization, it can now lay claim to being the best-lighted city in Texas.

One of the features of this modernization program is the installation of new Union Metal steel lighting standards offering greatly increased mounting heights over the old types. It is this placing of the luminaires higher above the street which makes possible greater visibility through more efficient light distribution.

Progressive cities specify Union Metal steel standards because their modern design combines all those factors required not only for scientific lighting but attractive appearance and long life as well. Bring your street lighting problems to Union Metal. Their 33 years' experience in this specialized field is available to you without obligation.

THE UNION METAL MANUFACTURING CO.
CANTON, OHIO



Union Metal Combination Light Standard and Trolley Pole Design No. 5838X1 installed on Congress Avenue, Austin, Texas.

Outdoor Lighting

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Increased Traffic Demands Better Illumination

New Jersey Experiments Furnish Proof

By E. R. SHERBAUM
Electrical Engineer, State Highway Department

IN 1937, an average of four persons were killed and 24 sent to the hospitals every day in New Jersey.

To mitigate this serious situation, an intensive campaign against both day and night accidents on the New Jersey State Highway System has been inaugurated. The plan includes policing, highway lighting, traffic signals, divided highways, lane markings, grade separations, guard-rails, electric and reflectorized directionary signs, white reflecting curbs, circles and all other known safety features. In our campaign against night accidents, after studying all available data on the subject, we decided to find out for ourselves the actual relationship between highway lighting and the night accident rate in New Jersey.

Experimental Projects

In order to find out whether or not the expenditure of large sums of money for straightaway highway lighting could be justified at this time, Commissioner Donald B. Sterner directed that careful and complete studies be made of the subject, and three stretches of the Highway System were selected as "accident laboratories." On these sections 24-hour accident patrols were inaugurated, three men alternating every eight hours, riding back and forth continuously, over five-mile stretches, marked out in stations of 200 feet, so that accidents could be accurately spotted, and traffic counters were stationed at strategic locations to record traffic volumes, so that certain ratios of accident rate and traffic flow could be established.

Project No. 1

New Jersey Route 25; Elizabeth to Newark Viaduct, 3.33 miles. On August 1, 1937, lighting units were turned on, using 400-cp lamps on 400-foot centers, and on November 1, 1937, the spacings were reduced to 200 feet and the lamp sizes to 250-cp. Observations were as follows:

STAGE A (400-cp on 400-foot centers)

	Accidents Non-Fatal	Fatal	Average Traffic, 16 Hours
Unlighted—Aug. 1 to Oct. 31, 1936 (day)	82	1	
(night)	20	0	44,500
Lighted—Aug. 1 to Oct. 31, 1937 (day)	56	0	
(night)	28	1	50,700

The traffic volume in 1937 increased 13.68%, and the night accidents increased 40%.

STAGE B (250-cp on 200-foot centers)

			24 Hours
Unlighted—Jan. 1 to July 31, 1937 (day)	57	0	
(night)	61	3	63,800
Lighted — Jan. 1 to July 31, 1938 (day)	110	8	
(night)	59	0	70,200

The traffic volume in 1938 increased more than 10%, night accidents decreased, and fatal night accidents were eliminated.

The abnormal six-lane dark-surface roadway absorbs much of the light of the 250-cp units and does not reflect sufficient light to give proper visibility to motorists ordinarily traveling at high speed on this roadway at night-time. The intensity of these lamps has now been increased from 250-cp to 400-cp—and this "Stage C" and the observations will be reported as soon as sufficient data are obtained.

Project No. 2

New Jersey Route 4 from George Washington Bridge to Paterson, 12 miles. On December 4, 1937, lighting units were turned on, using 400-cp lamps and 600-cp lamps, on 200-foot centers in the built-up areas and 400-foot centers in the rural areas. Observations were as follows:

	Accidents Non-Fatal	Fatal	Average Traffic, 16-Hour Count for 3 Days
Unlighted—Jan. 1 to Sept. 30, 1937 (day)	138	2	
(night)	101	5	55,577
Lighted — Jan. 1 to Sept. 30, 1938 (day)	161	3	
(night)	74	2	58,611

The traffic volume increased 5.46% in 1938; the night accidents decreased 26% in 1938, and fatal night accidents decreased 60%.

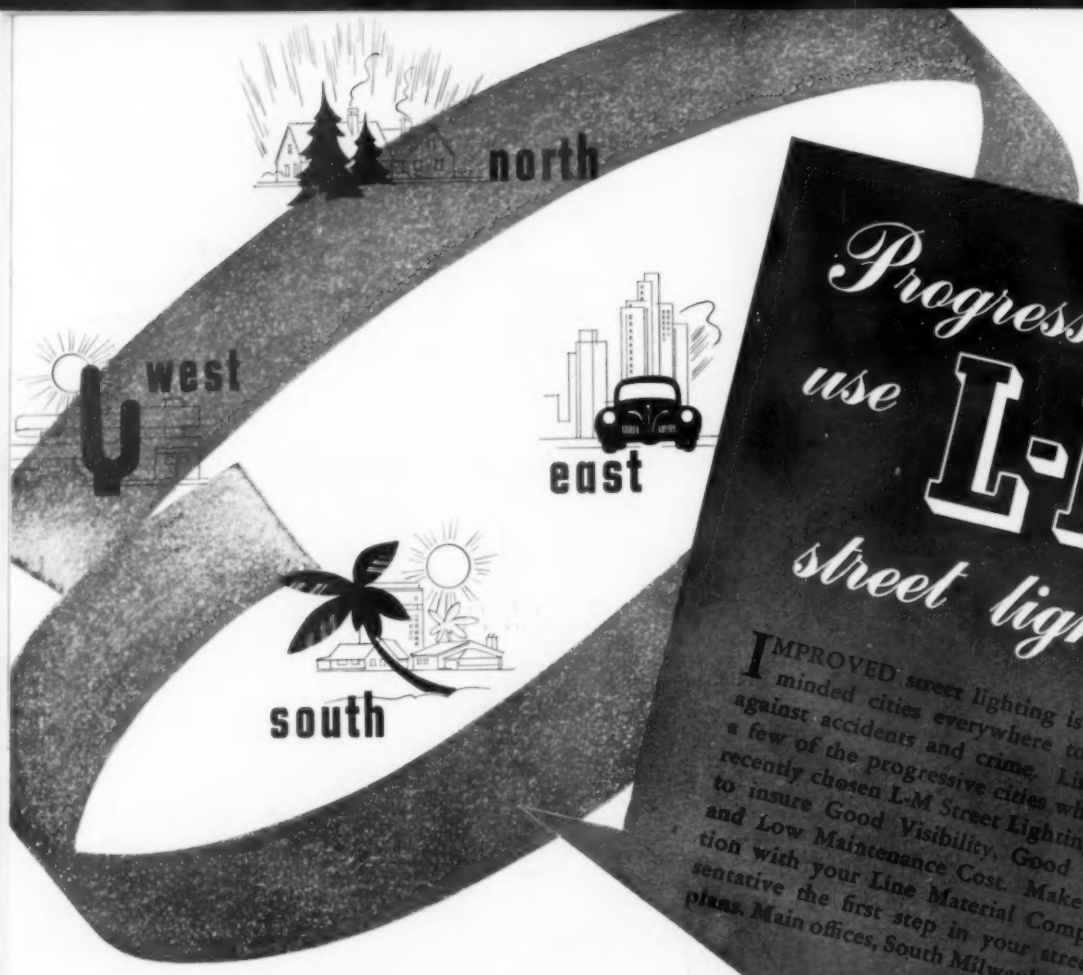
Project No. 3

New Jersey Route 43 (White Horse Pike)—Absecon to Egg Harbor, 11 miles. On May 13, 1938, lighting units were turned on, using 400- and 600-cp lamps on 200-foot centers. Observations were as follows:

	Accidents Non-Fatal	Fatal	Average Traffic, 16 Hours
Unlighted—May 24 to Sept. 24, 1937 (day)	14	0	
(night)	18	3	9,300
Lighted — May 24 to Sept. 24, 1938 (day)	28	0	
(night)	18	0	12,650

Traffic increased 35 per cent in 1938, and fatal night accidents were eliminated during this period. During the July Fourth holidays, for the first time in its history, this stretch of Route 43 experienced not a single night accident.

In order that comparative studies can be made of incandescent and sodium lighting, one mile of 6,000-lumen units has been installed on Route 43 (White Horse Pike) at Absecon, and in addition, 50 6,000-lumen units are being installed on Routes 2 and 6 at Bendix Airport, and 88 on Admiral Wilson Boulevard between the Camden Airport Circle and Twelfth Street, Camden. On these installations, luminaires of various manu-



Progressive cities use L-M street lighting

IMPROVED street lighting is helping safety-minded cities everywhere to win the fight against accidents and crime. Listed below are a few of the progressive cities which have only recently chosen L-M Street Lighting Equipment to insure Good Visibility, Good Appearance, and Low Maintenance Cost. Make a consultation with your Line Material Company representative the first step in your street lighting plans. Main offices, South Milwaukee, Wisconsin.

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Sioux Falls, S. D.
South Milwaukee, Wis.
Van Buren, Arkansas
Vermillion, S. D.
Washington, D. C.
Westbrook, Minn.

CONNERSVILLE, INDIANA

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LINE MATERIAL CO

facturers have been placed alongside each other in order that, in addition to the studies of the sodium vapor light itself, accurate cost data may be compiled on the products of the various manufacturers.

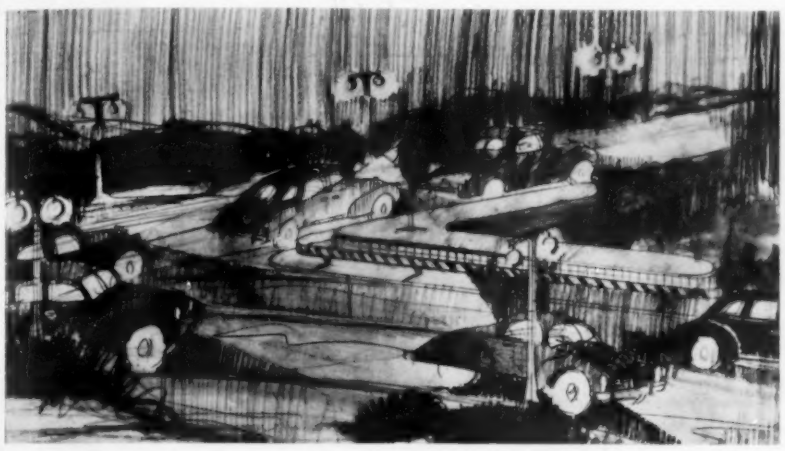
From studies recently completed by our "Highway Accident Laboratory," it was found that 250-cp lamps, staggered approximately 200 feet apart, using 25-foot mounting heights and approved highway lighting fixtures, on mast-arms of sufficient length to bring the unit at least 3 feet over the edge of the paved roadway, produced sufficient illumination on light-colored pavements to silhouette objects on the highway sufficiently to permit an automobile driver obeying the State Motor Vehicle Laws to operate a car in good condition on the state highways in comparative safety.

In addition to the 1,200 lighting units on the White Horse Pike, approximately 4,800 incandescent units are under contract to be installed in various municipalities under Highway Commissioner Sterner's State Highway Reimbursement Program. To this group of municipal units, we have completed plans for the installation, before the summer of 1939, of additional highway lighting units at every important county road and state highway intersection in the state. This program will complete the installation of lighting units throughout the state at all important crossroads and in the congested urban areas.

In 16 counties where modern state highway safety lighting installations have been made, the record for eleven months has been as follows:

	1938	1937	% Drop
Deaths	154	245	37
Serious injuries.....	2,538	3,191	20

Deaths and injuries in the daytime were about the same for the two periods, as was the case both day and night in the five counties where lighting installations were not made in 1938. The accident reduction value of highway lighting is thus clearly shown.



Illuminated Traffic Divider

AFTER thorough investigation, the conclusion was reached that two factors causing accidents at the divisional thoroughfares of the Chicago Park District were design and illumination.

In the past, a safety island was used at the dividing point to warn the motorist of a change in the direction of traffic. However, though the island warned the motorist of danger at a particular point, it did not clearly outline the changed course of the road, thereby confusing the driver as to its exact direction.

Several methods were designed to remedy this condition. One was the use of shorter light poles spaced close together and having colored globes instead of the clear or frosted types. This method of illumination was to be used at dividing points and curves. This plan did not work, since lowering the height of the light pole would serve only to shorten the rays of light, thus illuminating the sides of the road and leaving the center dark. Some new plan had to be devised which would permit the use of standard light poles and which would also illuminate the dividing point for a distance of at least 30 feet in order to outline the new course of the roadway. The result was the traffic divider. The photograph shows the illuminated traffic divider being used after nightfall with Tuthill guards employed as an added safety feature.

The traffic divider is 30 feet long, 32 inches wide, and 30 inches high. The wall facing traffic is made up of one course of glass brick laid over the foundation, then six courses of common brick, two courses of glass brick, and finally the coping. The inner wall is made of common brick. The top, or coping, consists of removable sections so that the area between the two walls can be cleaned or repainted. Inside this long fixture are two 6,000-lumen floodlights. The beams of these lights are directed from the rear of the bumper toward the front.

Upon approaching the traffic divider, the motorist sees three rows of illuminated glass brick, one row below the bumper guard and two above. The glass brick diffuses all light, thus eliminating any possibility of glare. However, it does cast enough light on the road to outline its course to the driver. The lighting of the street surface, although not taken care of by the divider, is illuminated by the regular standard light pole now being used by the Chicago Park District.

OTTO K. JELINEK,
Traffic Engineer, Chicago Park District.

Courtesy of Peoria Journal-Transcript

HAMILTON BOULEVARD, PEORIA, ILL., LIGHTED BY 66 HOLOPHANE-EQUIPPED G.-E. LUMINAIRES MOUNTED 22 FEET HIGH ON POLES

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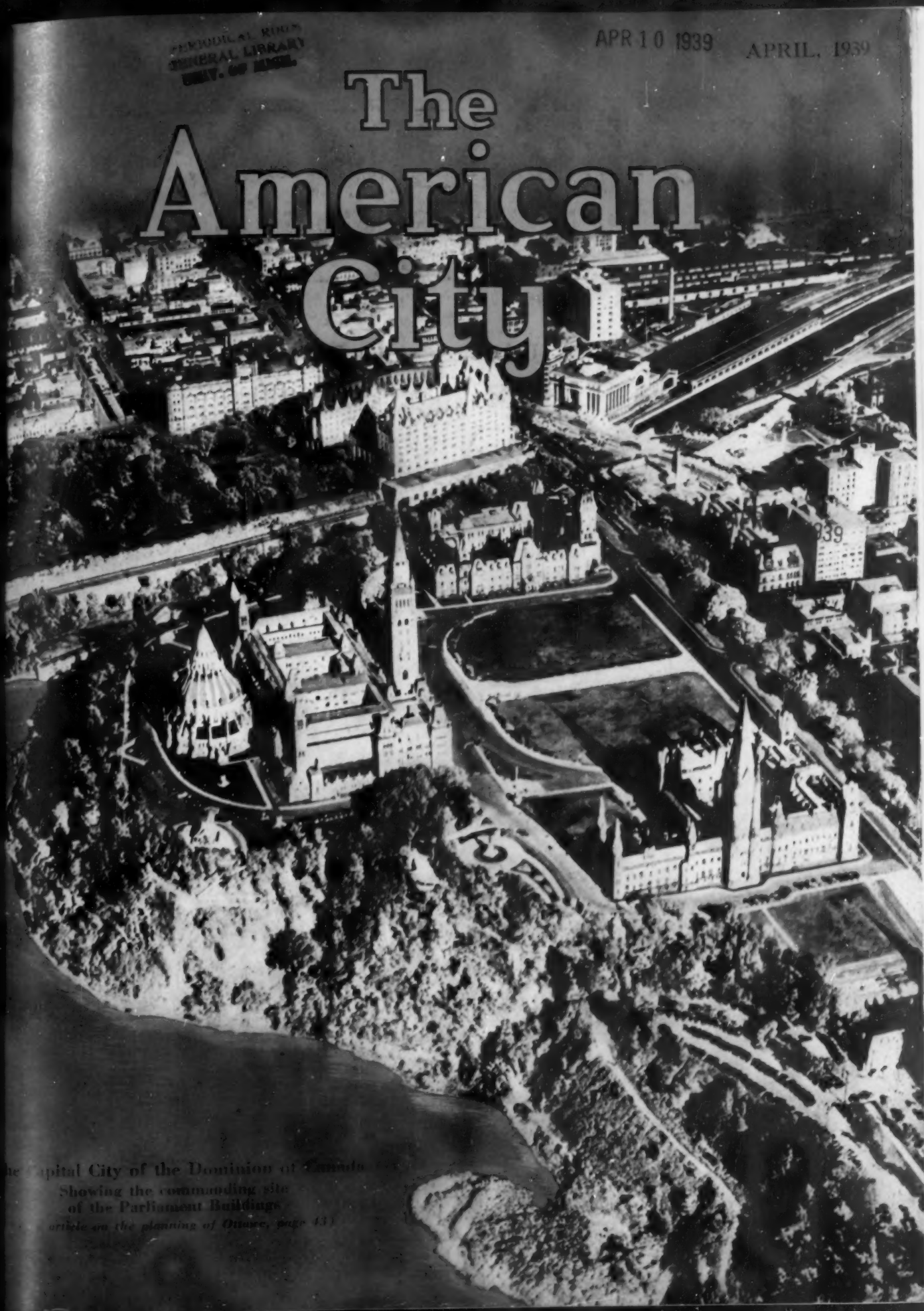

...pital City of the Dominion of Canada
Showing the commanding site
of the Parliament Buildings
article on the planning of Ottawa, page 43